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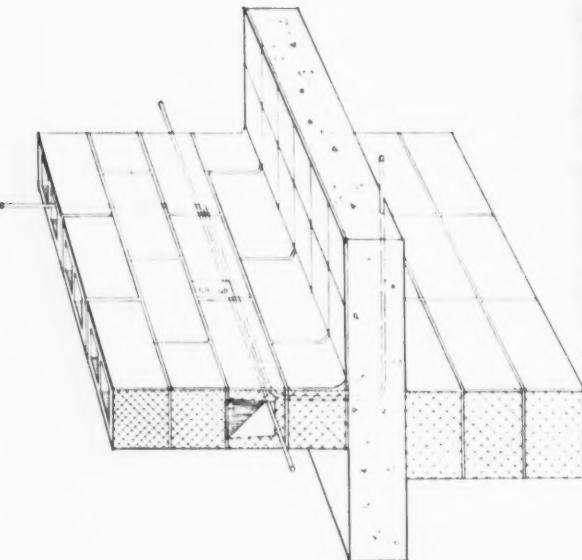
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- $\frac{1}{4}$ " exposed joints with $\frac{3}{8}$ " mortar bed.

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concrete
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units

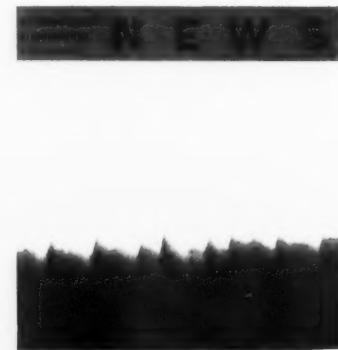
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manufactured in 27 International
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In keeping with this month's theme—glass, tile, ceramics and masonry—Tony Palladino has designed a cover reflecting, as a common denominator, the high heat required in the manufacture of these materials. Photo by Nick Musi.

8

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- 17 New technique for masonry: prestressing**
- 21 Faceted glass: the new look in stained glass windows**
- 24 Structural clay products: a survey of modular progress**
- 26 Heat, glare and the new grey glasses**
- 2 Gazette**
- 4 Mail**
- 6 Forecast: impact of the 1961 housing act**
- 7 A/E news**
- 28 Products, equipment, materials**
- 45 Literature**
- 57 Preview 33: Philharmonic Hall, Lincoln Center**
- 56 Abstracts: Nervi speaks out on style**
- 60 Names: Robert B. Newman**
- 61 Documents**
- 62 Books**
- 63 Digest 32: a fill for the cavity wall**
- 65 Editorial**
- 66 Ad index**
- 67 Calendar**

Reader service cards facing pages 1 and 66

VINCENT G. KLING FAIA has been awarded a Gold Medal by the City Council of Quito, Ecuador for his design of the new United States Embassy office building in that city.

HERBERT E. ZIEL, associate in charge of air conditioning and ventilating for Albert Kahn Associated Architects and Engineers, Inc., was elected chairman of the Air Conditioning in Industry Committee of the American Society of Heating, Refrigerating and Air Conditioning Engineers at their recent national convention.

ADOLPH G. SYSKA PE, a founding partner in the firm of Syska & Hennessy, Inc., died recently at the age of 71. He had been active in many engineering associations.

WILLARD W. DIKEMAN has been named architectural representative for the Structural Clay Products Institute. His office is at Room 826, Chrysler Building, New York City.

RICHARD B. BELFORD has been elected chairman of the Research Council on Riveted and Bolted Structural Joints at the Research Council's recent 14th annual meeting.

JORGEN HANSEN, a graduate architect from the Royal Academy of Fine Arts in Copenhagen, Denmark, has been appointed design coordinator of architecture and interiors by Cushing & Nevell, industrial designers and consultants, of New York City.

DR. CHARLES W. LAFFIN JR., has been appointed President of N. Y. State University's Agricultural and Technical Institute. The Institute is known for its departments of Highway and Bridge Construction and Building Construction.

ANTHONY A. BLISS, president of the Metropolitan Opera Association, and EDGAR B. YOUNG, secretary of Lincoln Center for the Performing Arts, have been elected to the board of directors of the Center.

FRED C. LIMBERT, partner in Samborn, Steketee, Otis and Evans, engineers and architects of Toledo, has been elected chairman of the Functional Group of the Consulting Engineers of Ohio.

MILES N. CLAIR was recently elected president of the American Society for Testing Materials. ALFRED C. WEBBER will continue as senior vice-president. Among the new members elected to the Board of Directors was ALBERT G. H. DIETZ, professor of building engineering, Massachusetts Institute of Technology. Dr. Dietz is also a member of the A/E NEWS technical advisory panel.

DR. WARREN C. STOKER PE, Dean of the Hartford Division at RPI, has been made a Fellow of the American Institute of Electrical Engineers, in recognition of his contri-

WHY

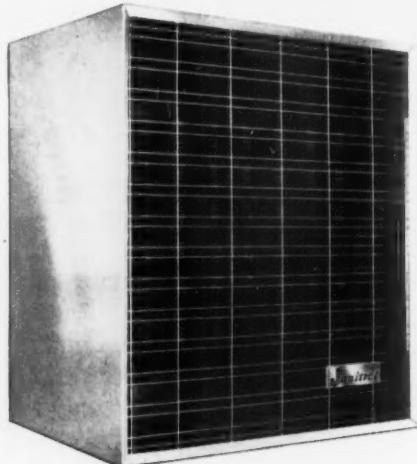


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New JANITROL "67" Series

New outside! Beautifully proportioned, with crisp, clean-lined styling to harmonize with any commercial-industrial installation requirement. New inside! Loaded with important technological advancements to assure performance and reliability far ahead of any other unit heater on the market today.

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- New improved fan design assures exceptionally low sound level.
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- Fully enclosed sides and bottom; finished in neutral Phoenix Beige baked enamel, with metallic gold grille.
- Prelubricated motor—continuous duty, rubber-cushioned.
- Adjustable Direct-A-Flow Louvers are concealed.
- Complete gas shut-off in case of pilot failure.
- Low Voltage thermostat
- Eleven sizes from 30,000 to 250,000 Btu/hr. inputs.
- Famous Multi-Thermex Heat Exchanger—over 3 million steel heat exchanger tubes in use since 1940, with less than 1/4 of 1% replacements for any cause!

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UNIT HEATERS AGAIN AND AGAIN...

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Addition of 30 More JANITROL UNITS Brings Total to 179 at Temco's Garland, Texas Plant

The complete satisfaction you can expect by specifying Janitrol unit heaters for your commercial-industrial jobs is clearly reflected by Temco's outstanding (but not at all unusual) experience with Janitrol performance.

Janitrol first went to work for Temco Aircraft Corporation in 1946, when 100 Janitrol units were installed. Temco added 43 more Janitrol's in 1951-52 and six in '53, to keep pace with their growing Garland plant. Since 1953, 30 more Janitrol's have gone on the job as the



plant has grown.

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Among the features that make Janitrol your best specification is the exclusive Multi-Thermex Heat Exchanger. It is virtually indestructible. In fact, replacements for any cause have been less than $\frac{1}{4}$ of 1% in over three million heat exchanger tubes produced since 1940.

Today's new Janitrol gas unit heaters are even better than ever, with great new functional styling, and installation flexibility that enable you to "customize" commercial-industrial jobs to individual requirements at lowest cost. Get all the facts on the new Janitrol 67 Series unit heaters from your Janitrol representative.

In addition to space heating, Temco, like many other firms, has adapted Janitrol Unit heaters for use in manufacturing or processing. Here, a high velocity heater, located above the lighting fixtures, provides heat through a large fabric duct for use in curing aircraft fuel tanks that are being overhauled.

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butions to electrical engineering education.

BENJAMIN M. GRUZEN AIA has been elected president of the Metropolitan Chapter of the Construction Specifications Institute in New York City.

GEOFFREY PLATT FAIA has been named Chairman of the New York City Committee for the Preservation of Structures of Historic and Esthetic Importance. Other members of the 13-man group include Arthur C. Holden FAIA, Frederick J. Woodbridge FAIA and Harmon H. Goldstone AIA.

ADRIAN WILSON & ASSOCIATES, architects-engineers of Los Angeles, has been awarded a certificate of appreciation for services rendered the U. S. Navy, the U. S. Air Force and the Republic of the Philippines, in connection with performance of architectural and engineering construction.

B. ROBERT SWARTBURG AIA has been appointed president of the North Orlando Company and the North Orlando Utilities Company, in North Orlando, Florida.

MORRIS KETCHUM JR. FAIA has been elected Director of the New York Region of the American Institute of Architects.

office announcements

COWELL AND RADENHAUSEN, architects and engineers, have relocated their offices to 350 Madison Avenue, New York City.

EDWIN B. MORRIS, JR., AIA has been appointed an Associate of the New York City architectural firm of Urbahn & Brayton. Morris was formerly Assistant Executive Director of the AIA.

BATLAN & OXMAN, consulting engineers, have moved their offices to 230 W. 41st Street, New York City.

WILLIAM B. HELLER AIA has become a partner in the firm of Carson, Lundin & Shaw, architects, of New York City.

JOHN ALEXANDERS, consulting engineer, announces relocation of his offices to Radburn Plaza Building, Fair Lawn, New Jersey.

ARMANDO F. ARMIJO AIA has been appointed associate in charge of design and planning in the firm of Walter H Sobel AIA & Associates, of Chicago.

DALFUS & LOVETT, consulting engineers, announce the removal of their offices to 20 East 30th Street, New York City.

HANS A. FRIEDMAN AIA has announced the formation of a new architectural firm, Friedman, O'marzu, Zion & Lundgoot, which has offices at 150 North Wacker Drive, Chicago, Illinois.

MAIL

On architectural research

TO THE EDITOR:

I was very much interested in your editorial [A/E NEWS, June 1961] on the desirability of training architectural research and design consultants.

Too long the universities have ignored this important gap in the relationship of curriculum development and the needs of the building industry.

In the early 1940's a group of us met to study this need under the guidance of K. Lonberg Holm, Architectural Research Consultant to the F. W. Dodge Corporation and we formulated a thesis entitled "Design Training for the Building Industry."

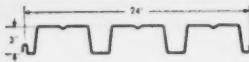
The weakness in your premise at this point is the tendency to isolate this person in the field. This is weak. Specialty training can only succeed when it develops naturally from an integrated system of design training. Such a system recognizes the six phases of training in relation to the six phases of industrial production, i.e.: research, design, fabrication, distribution, utilization and elimination.

Only when the schools recognize these integrated relationships to the multitudinous fields of production will they be able to cope with the suggestion you have put forth. Otherwise, we will create another group of 90 day wonders whose lives will be jeopardized the minute they are put out into the world of reality.

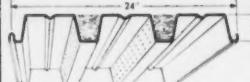
SIDNEY L. KATZ, FAIA

Architect, Chairman of the Board,
National Institute for Architectural Education.

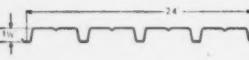
Steel deck or centering...you name it, INLAND has it!



NEW! N-DECK — Available in lengths from 6'0" to 28'6". Carries normal roof loads over spans up to 16'0". Especially practical for canopies.



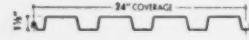
NEW! N-ACOUSTIDECK — Steel deck and acoustical ceiling in one panel. For spans to 16'0". Noise-Reduction Coefficient, .70.



A-DECK — For purlin spacings not exceeding 8'4". Narrow ribs provide deck surface that supports the thinnest or softest types of insulation.



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B-DECK — For spans to 10'0". Wide rib distributes metal for greater structural efficiency. Well suited for use as side wall panels.



B-ACOUSTIDECK — Two-in-one panel combines steel roof deck with acoustical ceiling having Noise-Reduction Coefficient of .70. Used for spans to 10'0".



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Write for catalog 248—see Sweet's section 2i/Inl. For help on unusual problems, you can draw on the diversified experience of Inland sales engineers. Write or call your nearest Inland office.



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EP-SA

TO THE EDITOR:

Your proposal is interesting and timely, and deserves serious consideration.

The difficulties in form in such a proposal are small, however, compared to the difficulties in substance. Indeed, we are already able at Cornell to give advanced non-professional degrees within the College of Architecture. It is possible, for instance, to give a civil engineer whose primary interest lies in the field of structures a special program in architectural structures leading to the degree of Master of Science. For a man who has concentrated in the history of art we can give a Ph. D. in Architectural History. A similar special program might lead to such a degree as you suggest.

At the moment, however, the typical architectural school has very little to offer in the industrial field, and the typical design consultant for industry has wandered rather far afield from the broad objectives of architectural education. We must find a way to bridge this gap at least for those few men who are deeply interested and genuinely competent to do so, but the educational substructure is now at a rather primitive level.

However this problem is solved, I would prefer to see men turned

← Circle 102 for further information

out who had a traditional professional education with a graduate specialization.

BURNHAM KELLY, AIA
Dean, College of Architecture,
Cornell University.

TO THE EDITOR:

It is well understood that increasing complexities, variations and changes in architectural technology are adding immeasurably to the scope of architectural practice. Consultants in this and such other areas as planning, housing, education etc., are going to be needed as this scope continues to broaden. It should be recognized that such consultants must have intensive basic architectural training in order to best assist the general practitioner. This can be gained at the undergraduate level. Graduate work developing specializations desired should be equally intensive. I do not share in the facile trend in continuing to add years to the architectural curriculum. Acceleration and intensification of content in present curricula should still keep the total number of years of training within reason. To-day's excellent technical consultants can bear this out.

I am pleased with your editorial on the subject of the consultant for it helps focus on the need for the architect to keep abreast of the times and to control the entire sphere of architectural development.

OLINDO GROSSI, FAIA
Dean, School of Architecture,
Pratt Institute.

TO THE EDITOR:

I agree with you on the need for a "link between . . . architecture and . . . the manufacturer . . ." but I think that the task (your six points are basic enough but there is an infinity of variations stemming from each) is far more than any one consultant could do well—even if it were possible to pack the skill and knowledge needed into this remarkable person and have him retain it, add to it, and at the same time keep up an effective practice.

Again, assuming that design is important in all of this (some think that it is the core of architecture) where does this single consultant stand philosophically? Does he have one or many sets of principles? Is he a classicist or an anti-classicist?

At the undergraduate level, five-year architectural programs, if sufficient for basic professional training, don't begin to cover the humanities. Many schools have gone to six, seven, even eight years on this account alone. I fear that a graduate degree in the technology of building with the quantitative scope that you propose could not in two years get much deeper than the average master's degree in architecture—some think that this is exactly the province of graduate training in architecture anyway.

But there is, as you say, a need



light-forms

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in incandescent lighting

Glowing geometric shapes combine the beauty of soft satin handblown glass with all-aluminum construction to provide an unusual combination of decorative effects limited only by the imagination of the designer. *light-forms* can be used individually or in combinations of alignment to create patterns of light that become an integral part of the architecture.

Designed for wall use only, *light-forms* may be used on either interiors or exteriors.

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MAIL

FORECAST

for a "link," an information way station, a clearing house that stands between architecture and manufacturing, serving both. Your idea is an excellent one but it appears to me that no one person can be trained for it or can do it. But I think that it is tailor-made for a research institute made up of people specifically trained for specific tasks ranging from architecture to manufacturing (including all the processes you name) and engaged in both basic and contract research.

PAUL SCHWEIKHER
Professor, Head
Department of Architecture
Carnegie Institute of Technology

TO THE EDITOR:

The area that you indicate in your editorial in the June issue needs badly to be explored and filled. So few of our profession are equipped to design at the source, which is largely the point at which decisions about products are made. There are some notable exceptions such as Leonard Haeger, John Callender and Wayne Koppes, but we need a stronger impact of the architect on the technology of building.

I agree as to the need of some specialized education in this field, but would only urge that it follow breadth of curriculum.

ROBERT W. MC LAUGHLIN, FAIA
Director, School of Architecture
Princeton University.

TO THE EDITOR:

We have all enjoyed reading your editorial in the June, 1961 issue. We couldn't agree with you more that there is a need for the architectural research design consultant.

Several years ago Perkins & Will realized this was a need within the architectural office itself. We assigned the duties of "Research and Development" to one of our top-project architects, Wes Wieting. Mr. Wieting's department serves in a staff capacity collecting and distributing information on new materials, technical data and construction trends. The records of methods and materials used on each job are kept for performance comparison. These, in comparison with reports from owners and field superintendents, are directed toward including the planning, design, working drawings and specifications for all projects.

During the years our Research and Development department has been in operation we have found that it is mutually profitable to both Perkins & Will and manufacturers who supply architectural materials. We have, in cooperation with the manufacturers, developed new techniques which, in many cases, have become part of the manufacturer's line.

LAWRENCE B. PERKINS, FAIA
Perkins and Will
Chicago, Ill.

THE 1961 OMNIBUS HOUSING BILL: HOW \$5.6 BILLION WILL BE SPENT

President Kennedy has signed and passed into law the 1961 omnibus Housing Bill.

The Act had been a major part of President Kennedy's campaign platform last year and the Administration believed its passage would hasten economic recovery in depressed areas. Its final cost is expected to exceed \$5.6 billion.

Major features of the new Housing Act are the extension to 35 and even 40 years, of FHA mortgages in some categories; lower FHA down-payments; a new program administered by FHA for home repair and rehabilitation; and a total of \$75 million made available in direct loans for housing of the elderly.

Urban Renewal

In addition, the Federal urban renewal program was expanded by \$2 billion in grants, doubling the present amount of grant authority. This however, is about $\frac{1}{2}$ billion dollars less than asked for by the President and approved by the Senate. The total grant authority is now \$4 billion.

A number of changes was made in this program, including increased Federal aid for small communities liberalizing of urban renewal relocation payments, and provision of increased urban planning assistance grants.

Congress authorized about \$25 million of this money for mass transportation pilot studies. The President is expected to release this urban renewal money at the rate of about \$600 million per year.

To stimulate new materials, techniques

Of particular interest to architects experimenting on less-expensive ways of providing housing is a section of the Bill providing FHA with a somewhat restricted program for insuring loans on houses containing new materials and techniques in their design and construction.

Among the materials and techniques described were houses with plumbing of nylon tubing; plastic wall coverings; veneer finished particle boards; and a stressed-skin sandwich panel with a plastic core.

If execution of this new provision meets with success, greater funds for loans on experimental housing can be expected.

The Government was believed to have taken this step to counter criticism that FHA standards tended to discourage new and improved methods of home construction.

College dormitory construction

Supplementing the Aid to Education Bill that has not received all the support the President had hoped for, a section of the omnibus 1961 Housing Act provides for housing of college students. Housing is provided in the form of grants to colleges totaling \$1.2 billion to be distributed over a four-year period. This amount was still some \$200 million short of

what the President had asked for and the Senate had previously approved.

A new program was initiated with this Housing Bill to assist public bodies in acquiring "open spaces" on a permanent basis. The "open spaces" provision allows about \$50 million to towns and cities to purchase land for parks, playgrounds and other recreational purposes. The amount passed by Congress was about half of what had been requested by the White House.

Another provision authorized as much as \$50 million in loans to local governments to acquire and repair mass transportation facilities. This figure is independent of the \$25 million available to cities in urban renewal grants to be used for mass transit pilot studies.

Low income housing

The greater portion of the Act, however, deals with lower-income housing costing less than \$20,000. Home improvement loans up to \$10,000 with repayment allowed over a 20-year period at not more than 6% interest, were a major feature of the Bill.

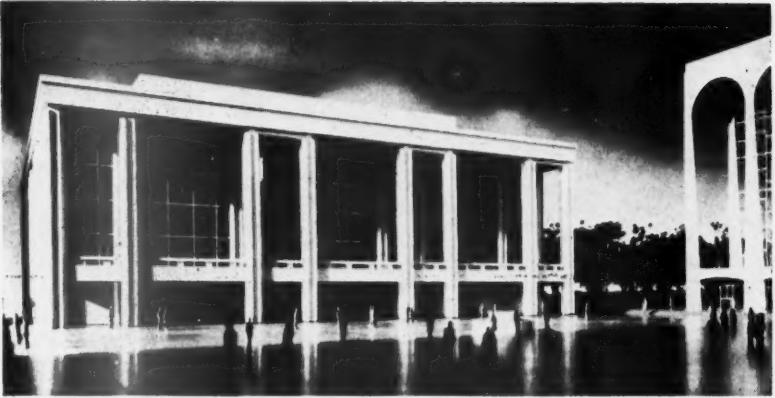
An additional 100,000 units of low-cost public housing are now authorized under the Bill, and greater local responsibility in admission policies has been provided. A \$5 million dollar demonstration program for low-income persons and families was also created. The cost of these 100,000 units was not determined.

Loans for the elderly

The Housing Bill authorized \$75 million in direct housing loans for the elderly. While some public bodies presently receiving financial assistance from the Government are not eligible under the new provision, the list of possible users of the new section, in addition to non-profit corporations, are consumer cooperatives and some well-defined public bodies and agencies. The Administration had asked only \$50 million for this program.

Also, a proposal for a mere \$50 million in low-interest loans to small local government units to build community facilities was hiked to \$450 million dollars by Congress.

How much of the authorized new construction dollar will go for architect-designed building is open to speculation. Certain it is that those provisions dealing with college dormitory construction; with low interest loans to local government for construction of community facilities; with increased spending authority for urban renewal projects; and with FHA loan-insurance of housing using new techniques and materials, will inevitably, in one form or other, involve participation by architects and consulting engineers. Low cost private and public housing stimulated by the Bill, on the other hand, are likely to conform to present design patterns.



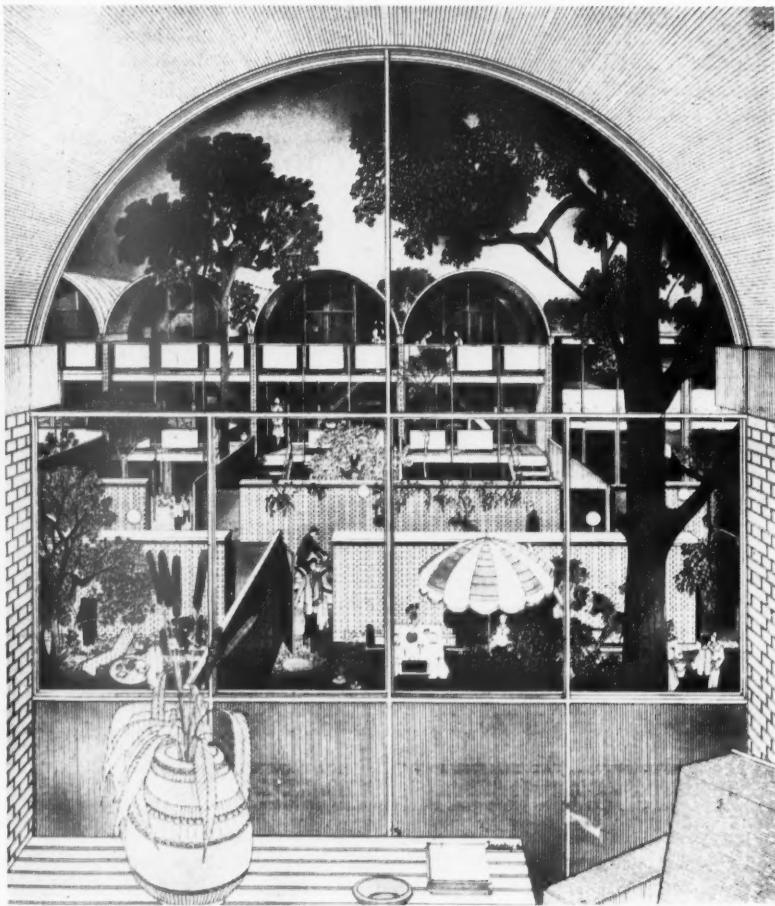
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1. Photo shows model of New York State Theater, which is to form part of the Lincoln Center for the Performing Arts. Theater will seat 2801 persons. Philip Johnson and Associates, architects.



2

2. Pedestrian bridge connects Denver-Hilton Hotel with department store in downtown Denver. Clear span is 86 feet. Bridge is enclosed with archway of transparent acrylic plastic. Architects are I. M. Pei and Associates.



3

3. River Park, \$10½ million urban renewal development for southwest Washington, D.C., is sponsored by Reynolds Metals Co. Project will consist of 134 town-houses and a high-rise apartment. Architects: Charles M. Goodman Associates. (Rendering by Jacoby.)

A/E NEWS

Eduardo Torroja dead

Eduardo Torroja, 61, expert and pioneer in thin-shell concrete construction, died recently in Spain.

Torroja founded and headed the Institute of Construction and Cement in Spain, one of the world's foremost organizations for experimentation and research in concrete construction.

Torroja first achieved international fame with his designs of long-span concrete structures such as the Zarzuela hippodrome and the Recoletos Jai Alai Stadium. That this fame was well-founded was proved when some of his structures withstood heavy bombing during the Spanish Civil War in the late 1930's.

More recent concrete construction by Torroja includes the Algeciras market-place and the Esla Viaduct.

Engineering schools' curricula

A majority of the nation's civil engineering educators favor major changes in engineering education, including a pre-engineering program and extension of the total period of education, according to a recent poll conducted by the American Society of Civil Engineers.

Among the conclusions reached are:

1 Sentiment for promoting graduate study in civil engineering and for establishment of graduate professional schools of engineering.

2 Majority of ballots in favor of moving toward a pre-engineering program and the extension of the total period of education.

3 Majority of ballots in favor of raising standards of performance and ethics in the profession and in favor

of taking an articulate position on the importance of basic scientific and cultural subjects.

Germany aids Lincoln Center

The Federal Republic of Germany, in an unexpected move, contributed \$2,500,000 toward the completion of the Metropolitan Opera House at Lincoln Center for the Performing Arts in New York City.

The West German government commented in making the gift that "we extend this gift . . . (hoping) . . . that peace can endure as steadfastly in the hearts of all of us in the same measure as the love for great music."

John D. Rockefeller III, Chairman of the Center's Board, in expressing his thanks to the West German Government for the contribution, noted that when plans were drawn for the new Opera House, he, Wallace K. Harrison FAIA and Anthony A. Bliss, President of the Metropolitan, toured German cities to study their experiences in theater design. Mr. Rockefeller also noted the "importance of German architectural, engineering and acoustical developments to the planning of the Metropolitan Opera House at Lincoln Center."

Civil War Hall of Fame proposed

A \$5,000,000 Civil War Hall of Fame has been proposed by a nonprofit group called the First Manassas Corporation.

The proposed building will house statues of Confederate and Union officers, a library of Civil War volumes and an auditorium.

The nonprofit group has been en-
(Continued on page 8)

True water repellency!



Silaneal helps prevent leaky walls

These brick "chimneys" prove that Silaneal® helps prevent leaks and improves the bond of high suction brick. Both test tanks were built by the same mason, using full head and bed joints from the same batch of mortar and the same type of *high suction rate* brick. The only difference: tank at right was built of brick treated with Silaneal sodium silicate. Filled with 8 inches of water, this tank showed no signs of leakage . . . even after five hours! The tank of untreated brick developed leaks even as it was being filled.

Why Does Silaneal Make Such A Difference?

1. It is applied to brick under tested and controlled conditions by brick manufacturers only.
2. It reduces the rate at which high suction rate brick absorbs water from mortar.

Result: Keeps mortar from drying too fast and shrinking. Eliminates hairline cracks between brick and mortar. Minimizes water seepage through finished walls.

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For illustrated brochure describing Silaneal in more detail, plus list of brick manufacturers offering Silaneal-treated brick, write Dow Corning, Dept. 1120.



NOTE: There are several brick manufacturers who produce brick having low suction which already perform similar to a Silaneal treated brick. Little improvement in efflorescence control and reduction in dirt pickup could be accomplished by treating this type of brick with Silaneal. Silaneal treatment would not improve the laying properties of this type of brick.

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A/E NEWS

(Continued from page 7)

dored by the Civil War Centennial Commission to sponsor the proposed Hall of Fame.

O. Roy Chalk, transportation executive of New York City and Washington, has been named Campaign Chairman.

"Responsibility"

"Responsibility" as it affects architects, owner and contractor was the theme of the recent annual convention of the New Jersey Society of Architects.

Three seminars were held, each exploring the share of responsibility held by these three participants in a building's construction.

Frank P. Woodruff AIA of the Prudential Insurance Company of America and Norman W. Kempson of the Johnson and Johnson Company represented the owner's view of "Responsibility." They both agreed to the need for a strong architect as organizer and coordinator if a building project is to progress smoothly to a successful conclusion.

William F. Blanchard, contractor and James A. Swackhamer, architect, but "wearing the hat of the contractor" (and substituting for A. A. LaFountain who died about ten days before the Convention), aired the contractor's view on "Responsibility." Mr. Blanchard spoke on the legal phase of responsibility and how it affects the contractor, decrying the complications that have crept into building due to a general shirking of duties and an overall "passing the buck" attitude, legalized by imposed insurance requirements and "grandfather clauses."

He further pointed out how new technology and materials, labor relations and the so-called "contractor-brokers" as well as other factors, have greatly increased and confused the legal aspects of responsibility.

Mr. Swackhamer talked of the moral aspects, pointing out that such questionable practices as the "or equal" clause, division of contracts, inability to limit or select bidders, and unfair and unjust financial pressures by subcontractors, owners and others have brought about a disintegration of moral responsibility on the job. This condition is further reinforced by the lack of a clear statement in the specifications on the level of excellence of material and workmanship desired,

as well as by general and tricky clauses intended to cover oversights and omissions. All these factors, as well as the social mores of our times, have made it almost impossible for an honest contractor to remain in business and show a profit, he concluded.

Lyle F. Boulware AIA and Harry M. Prince FAIA, architects, spoke in the final seminar on the architects' part of responsibility in the triumvirate of building. Mr. Boulware defined the daily responsibilities of the architect, pointing out that he owes equal consideration to the contractor and the owner.

Olindo Grossi FAIA, Dean of the School of Architecture at Pratt Institute, who acted as moderator, recommended to the Officers of the Convention, that they appoint a joint continuing committee of architects, owners and contractors to edit the transcript of the seminars and make a study of conditions in the industry. The Committee would publish a written report of findings and recommendations on how best to improve existing conditions.

Present indications from Adolph R. Scrimenti AIA, new president of the N. J. Chapter, AIA and the N. J. Society of Architects, are that Dean Grossi's recommendations will be carried out to the point of consulting with the highest officials available.

Competition for State buildings

Two years of cooperative study by the California Council of the AIA with Assemblyman Edwin Z'Berg of Sacramento were marked recently by Assembly passage of a Bill by Z'Berg, calling for an architectural competition for design of a new governor's mansion. The Bill now goes to the California State Senate for action.

Z'Berg's governor's mansion bill would set a pattern in California for competitions closely following AIA standards.

School proposal by NY Chapter AIA

Federick J. Woodbridge FAIA, Chapter president recently called for supervision of public school construction in New York City to be placed in the hands of the architect.

Woodbridge pointed out that the famous 1959 Preusse report, based on exhaustive study of the New York school construction program, recommended a similar procedure.

Under current New York City school construction systems the architect does not have this responsibility, Woodbridge emphasized.

The AIA proposal came on the heels of the completion of a current State Investigation Commission inquiry into New York City's school construction system.

Mr. Woodbridge deplored some Commission charges against architects as unsubstantiated.

Do elders need recreation?

A Conference on Housing for retired persons were told recently that there has been "a horrible over-emphasis on recreation" in considering needs and problems of senior citizens.

The idea was advanced by G. Warfield Hobbs, president of the National Council on the Aging. Hobbs said that many retired persons are in "reasonably good health" and have interests other than spending their entire days with shuffleboard or similar recreational activities. He contended that unless they "are made to feel a part of the stream" of active life, they will "crumble away"—"we must find ways to make them feel useful."

Hobbs spoke at a round-table discussion sponsored by the National Housing Center and the National Association of Home Builders. The one-day conference, attended by home builders, other industry groups, government officials and representatives of organizations dealing with senior citizens, was held in Washington, D.C.

A difference of opinion arose over whether retired people prefer to live in a community of senior citizens exclusively or in neighborhoods consisting of all age brackets.

Charles L. Cheezum, a St. Petersburg, Fla., home builder, said he has found that the majority prefer to live in an area with others of their "same age and interests."

But Donald Jaenicke, of Douglas Fir Plywood Association, Tacoma, Wash., said that 80 percent of persons who responded to a survey by his association, preferred to live in their own areas, with other age groups.

1961 NIAE thesis award

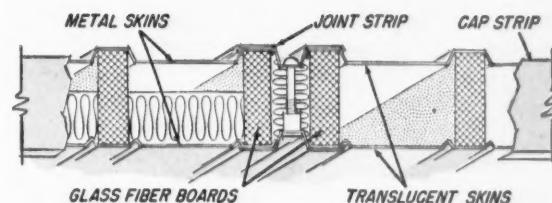
"A Portal to the U. S. A." by Hanno Weber, of Princeton University, won the 1961 Thesis Award and the \$1,000 Summer Foreign Travel Fellowship of the National Institute for Architectural Education.

(Continued on page 10)

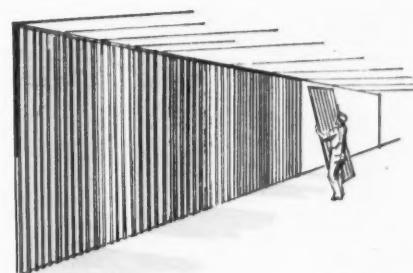
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(Continued from page 9)

Work started on new NBS labs

Secretary of Commerce Luther H. Hodges recently broke ground for the new National Bureau of Standards laboratories at Gaithersburg, Maryland.

The ceremony signaled the initial construction phase for a 20-building, \$104 million research facility which will permit complete relocation of the Bureau from Northwest Washington to the 555-acre site in Montgomery County, Maryland.

Architect is the firm of Voorhees, Walker, Smith, Smith and Haines of New York City.

New York "vest-pocket" housing

Audubon Houses, the New York City Housing Authority's first "vest-pocket" public housing development, are nearing completion.

A vest-pocket development is one which occupies less than a city block. Under the vest-pocket plan, the deteriorated portion of a block is replaced by a relatively small public housing development, and the block's still-valuable private housing and commercial structures are retained.

This development is expected to be ready for initial occupancy in October. Costs are estimated at \$2,800,000.

To each his own

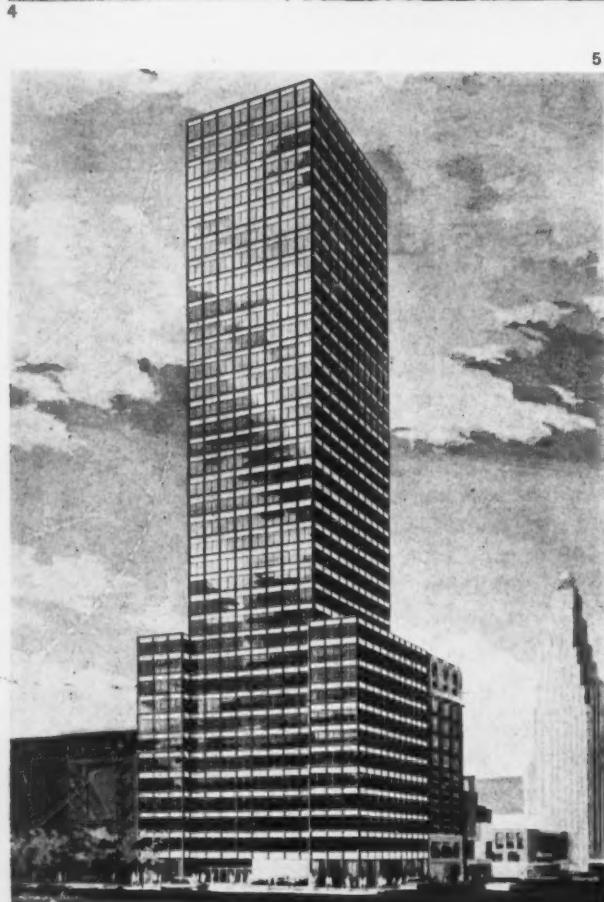
Generating equipment for a "metered air conditioning" system at LaGuardia Airport will be installed shortly as part of its \$65 million face-lifting program.

LaGuardia will be the first airport to have a metering system to measure the amount of chilled water used to produce cooling in the various airline locations in the terminal. Instead of paying a flat rate for air conditioning, the tenants of the airport will pay only for what they use.

Stainless steel award

Winners of a special competition to design a repetitive refreshment stand for the 1964 New York World's Fair grounds were announced by the National Institute for Architectural Education. The competition was sponsored by the Committee of Stainless Steel Producers, American Iron and Steel Institute.

The first prize design by Robert L. Amico (University of Illinois) employs a vertical stainless steel tubular posts. At the top of each post is a "Y" shaped framework which permits the posts to be linked together. Roof of the structure is made up of inflated balloons nested inside each "Y". Modular, rectangular units provide storage,



4. Model of Senior High School, Upper Chichester Township, Pa. The 789-student school consists of a 1-story commons building and a 2-story classroom wing. Architect: Vincent Kling FAIA. (Photo: L. S. Williams.)

5. Rendering shows 35-story office building and showrooms for the toy industry, at 7th Ave. and 41st St., New York City. No new construction has gone up in the Times Square area in 30 years. Pomerance and Breines are the architects. (Rendering by Rudolph Assoc.)

6. A \$40 million office and apartment building is to be built to the north of UN headquarters in New York City. A twin 31-story apartment building will rise above six floors of offices and a terrace floor. Architects: Harrison and Abramovitz. (Rendering by Schwartz.)



preparation, and trash space. The design is easily dismantled for storage or transportation.

A jury of architects selected the winning presentations from among 79 entries.

NJ scholarship program

At the 61st Annual Convention of the New Jersey Society of Architects and the N. J. Chapter, AIA, awards were made to various undergraduate and graduate students of architecture.

"For general high excellence in scholarship, for special achievement in certain areas of scholarship, for promise of advanced development, for creative ability in writing in the field of architecture," the Board of Governors of the Scholarship-Aid Program distributed honors as follows:

\$500 to John W. Kelsey, (Princeton), \$400 to Russell F. Tremaine, (Princeton), \$400 to Edward Z. Wronsky, Jr., who will shortly enter the University of Pennsylvania to work towards his master's degree, \$500 to Theodore T. Scott, (University of Kansas), \$300 to Ronald T. Ryan, (Pratt Institute), and \$100 to Miss Patricia Graham, (Pratt Institute). The latter is the newly created Author's Award which recognizes creative ability in writing on architecture.

Producers aid architecture students

For the third consecutive year, the New Jersey Concrete Products Association has presented a check of \$1,000 to the New Jersey Society of Architects for unrestricted use in its scholarship-aid program.

Recently announced was the offer of an annual scholarship of \$500 by the Structural Clay Products Institute to be awarded to a graduate student of architecture at Princeton University on the basis of imaginative use of brick or structural clay products in normal design problems included in his course of study. This award will be processed under the auspices of the scholarship-aid program of the New Jersey Society of Architects.

BMPIU of America award

James W. Oates, a 17-year-old California high school student has been awarded the first \$1,500 Harry C. Bates Merit Scholarship sponsored by the Bricklayers, Masons, and Plasterers' International Union. The scholarship is part of an educational aid program for deserving children of members of the Union and will be given annually, according to a recent announcement.

(Continued on page 12)

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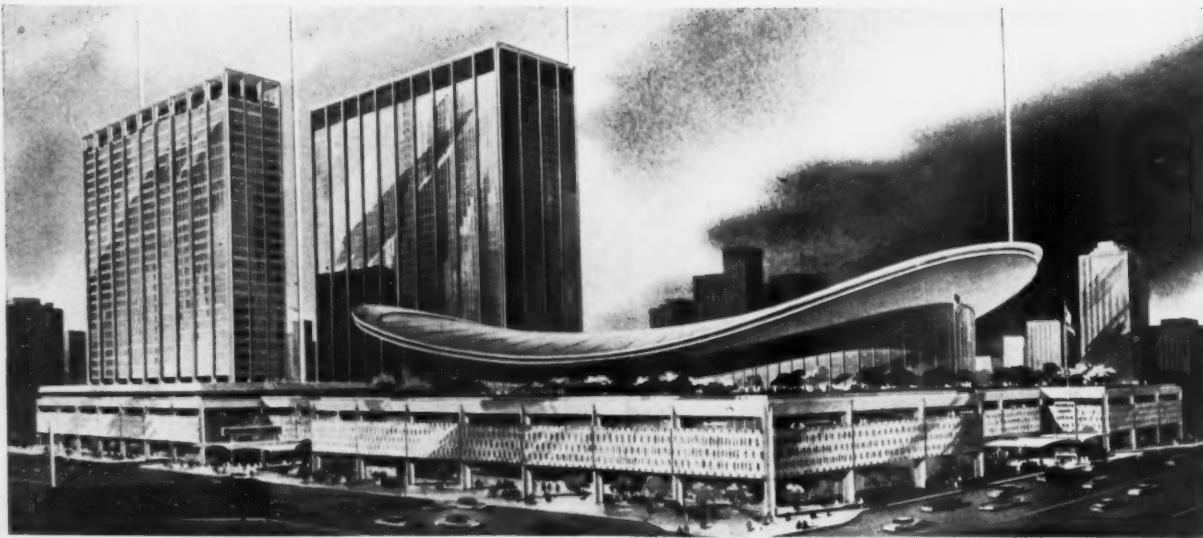
A/E NEWS

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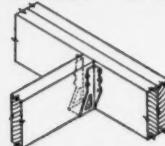


7. Sales office and book distribution center for McGraw-Hill Book Company recently opened at Corte Madera, Calif. The \$750,000 structure covers 53,000 sq. ft.. Bronze screen is by sculptor Harry Crotty. Architect is John S. Bolles AIA. (Photo: Pirkle Jones.)

8. View of new Madison Square Garden Center to be erected over the site of Pennsylvania Station, New York City. Included will be a hotel, arena, office building, 3-story plaza and the 25,000 seat Garden. Existing concourses will be demolished. Arch.: Charles Luckman Associates.



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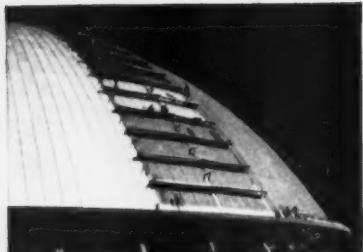


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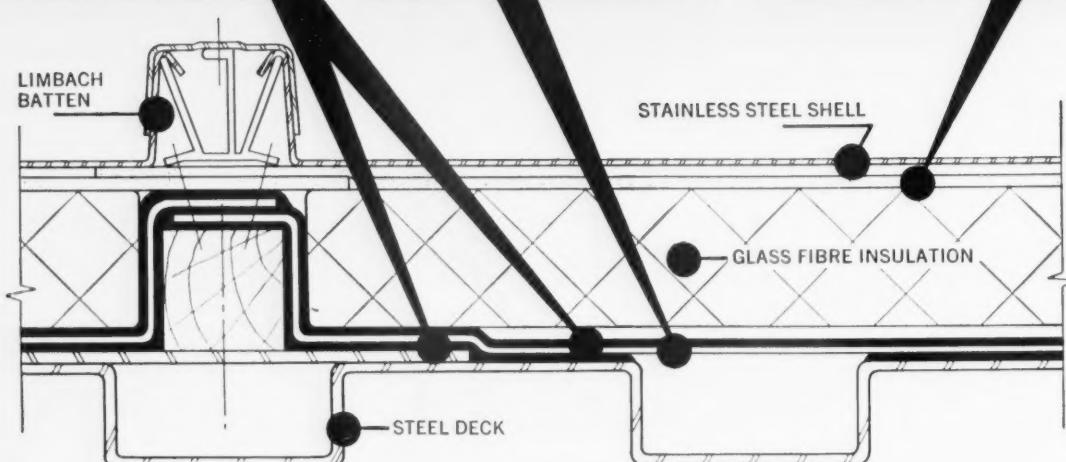
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Architectural & Engineering News

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August

UNIT MASONRY READY FOR PRESTRESSING TECHNIQUES

by Fred N. Severud

During the past few years great strides have been made in prestressing and post-tensioning concrete. The author, partner in Severud-Elstad-Krueger Associates, consulting engineers, shows in the following article how the same principle can be applied to unit masonry construction.

There are two aspects to this question. One involves certain technical problems which are certain to arise as prestressed and post-tensioned unit masonry construction evolves. The other has to do with the potentialities of the new system itself. We shall concern ourselves primarily with the latter, for the following reasons. The technical problems inherent will be solved. If, for example, a special mortar with high tensile qualities becomes necessary, such a mortar will be developed. If precast masonry units are required with a perfect fit, then aggregates will be developed which will lend themselves to the requisite grinding. (In fact, certain lightweight brick units are already being produced in specially designed furnaces which can be ground and which are devoid of further shrinkage). If condensation or leakage become serious problems, formulas will be developed to resolve them (new methods are, indeed, being worked on so that extremely efficient sprayed-on insulation techniques are in the offing).

To summarize this part of the discussion, let us state that these are all auxiliary engineering problems which, in one form or another, will in due course be solved.

Future of precast unit masonry

But a far more exciting area of discussion is provided by the potentialities of precast unit masonry as a system, by the shapes that the component units can adopt and the forms which such a system will make possible. By looking somewhat beyond these immediate engineering problems, we can examine more clearly the possibilities offered by precast units when they are combined with their natural "companion", pre- and post-tensioning.

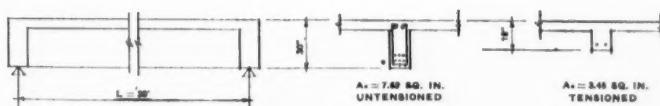
The first advantage is the elimination of formwork. This, today, is a trend which is unlikely to be reversed. Why build a structure of wood to serve for a few days, only to be pulled down. Why not rather mass-produce masonry units elsewhere and then find a way of erecting structures with them on the site without recourse to formwork?

The theory behind prestressing is, of course, well known. Tensioning induces a controlled compression force which makes a structural member more efficient and reduces its overall size (*see fig. 1*). By tensioning steel in this standard concrete girder, depth is reduced from 30" to 18". Or, by preserving the same depth of beam, span is increased by 50%, from 30' to 45'. There is a further economy if a high strength steel is used.

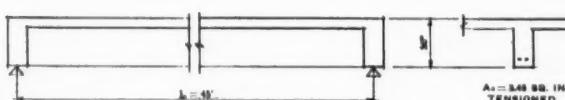
Present progress

It is on the whole strange that combinations of small precast units have not taken hold to a greater degree than they have. For example in the German "Taschenbuch für Ziegel Bau" (1953, p. 134), the system is depicted (*fig. 2*). Here the reinforcement is tensioned. In the United States, the DoxPlank system (*fig. 3*) has similar characteristics, but the reinforcement is not tensioned.

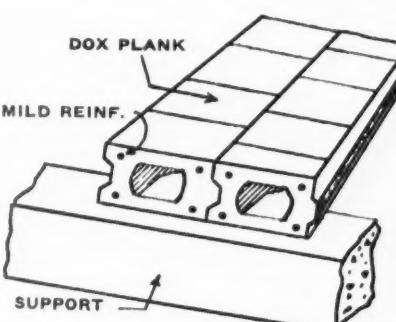
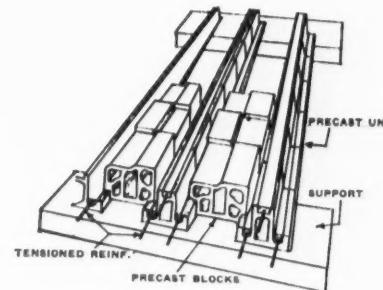
From this rather meager springboard let us plunge into the future and examine some very interesting and challenging possibilities. *Figure 4* shows a ceiling based on the use of a V-shaped block as a primary unit. This "corrugated" ceiling would be quite simple to construct, by using a technique similar to the German system shown in *figure 2*. Likewise a floor slab can be erected by assembling a series of precast pyramids (*fig. 5*). These pyramids would form the bottom chords and the web system of a "truss," with the poured-in-place concrete slab as the top chord. Such a system would lend itself well to a Youtz-Slick lifting operation. There is a variation of this method, which involves units with curved rather than flat sides. Also, a triangular system could readily be achieved (*fig. 6*).



1



2



3

Drawings 1-3 by Kurt Bachert

Larger spans

Moving now into the range of larger spans, the V-block technique can be used to form folded plates (*fig. 7*). Objections may be raised that this form is statically not stable, that the folded plate will become "unfolded." This is not so, since all the forces involved are axial, with no eccentricity. This can be visualized by imagining each half of the V being tensioned separately (*fig. 8*).

The individual units need not be solid blocks as shown in figure 8, but can be of pyramidal or similar shape. This would save weight without losing structural depth. The precasting technique has the advantage that intricate forms can be manufactured very economically.

Erection methods

These folded plates can be achieved by placing the units horizontally and raising them by tensioning. A double curvature can be attained in the manner shown in *figure 9*.

Construction can be either on a small scale, supported on a temporary, reusable steel bracing frame; or on large spans discussed above, by means of cranes or by the Youtz-Slick method. The latter permits raising by stages (*fig. 10*).

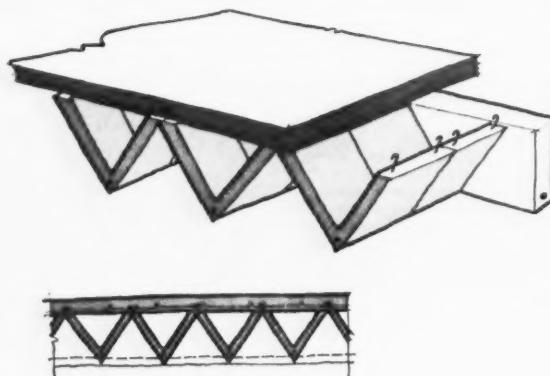
What we have said about flat, curved or V-block floor and roof plates is equally applicable to wall panels (*fig. 11*). When pyramidal and similar components are used, no "top chord" is required, since horizontal stresses on the wall panel would be far less than corresponding floor loads where system is used as a floor or roof. Also, as wall panels, spans are generally short.

Dome

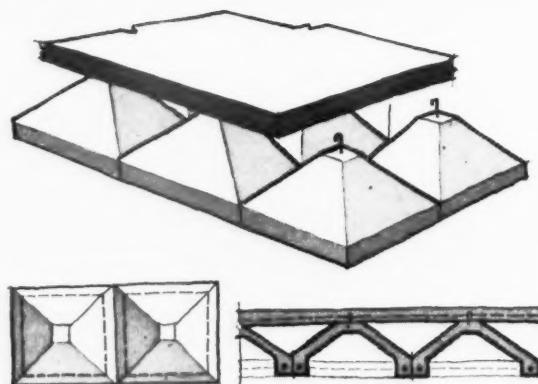
In conclusion, let us examine construction of a dome built entirely with precast, tensioned masonry units, which also does away entirely with need for formwork (*fig. 12*). When one ring is completed, it becomes self-supporting. If then we can build up the next higher ring piecemeal, spiral fashion, with the help of special tensioning devices, then these can be removed after use and reused as soon as final unit of a ring of units is in position. The bolts used develop compression radially and circumferentially until such time as the ring takes over this function upon completion. A rubber mallet used as bolts are tightened ensures a proper fit.

Many of the schemes shown (e.g. *fig. 4*) could be adapted to accommodate ducts or even to serve as ducts themselves.

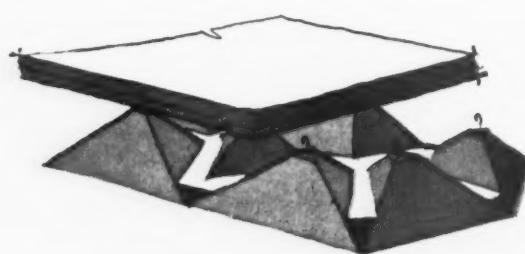
Since mass production of precast masonry units of any desired shape or size is relatively simple and inexpensive, it is clear that there are unlimited opportunities for formal experimentation and structural innovation based on pre- and post-tensioning techniques using such masonry units.



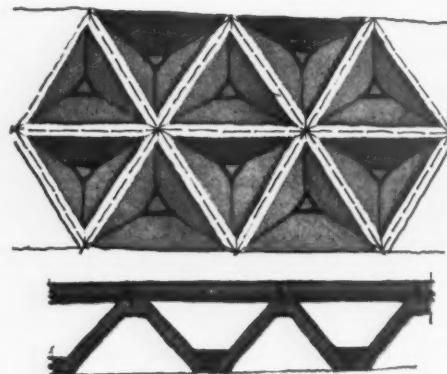
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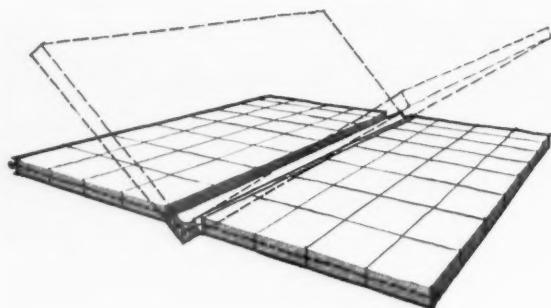
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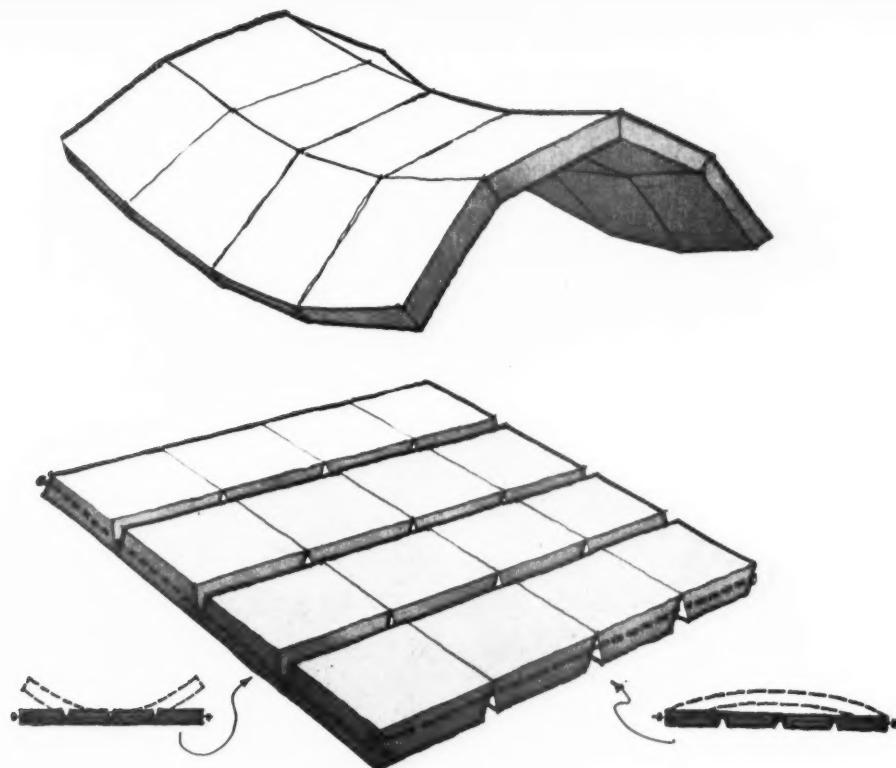


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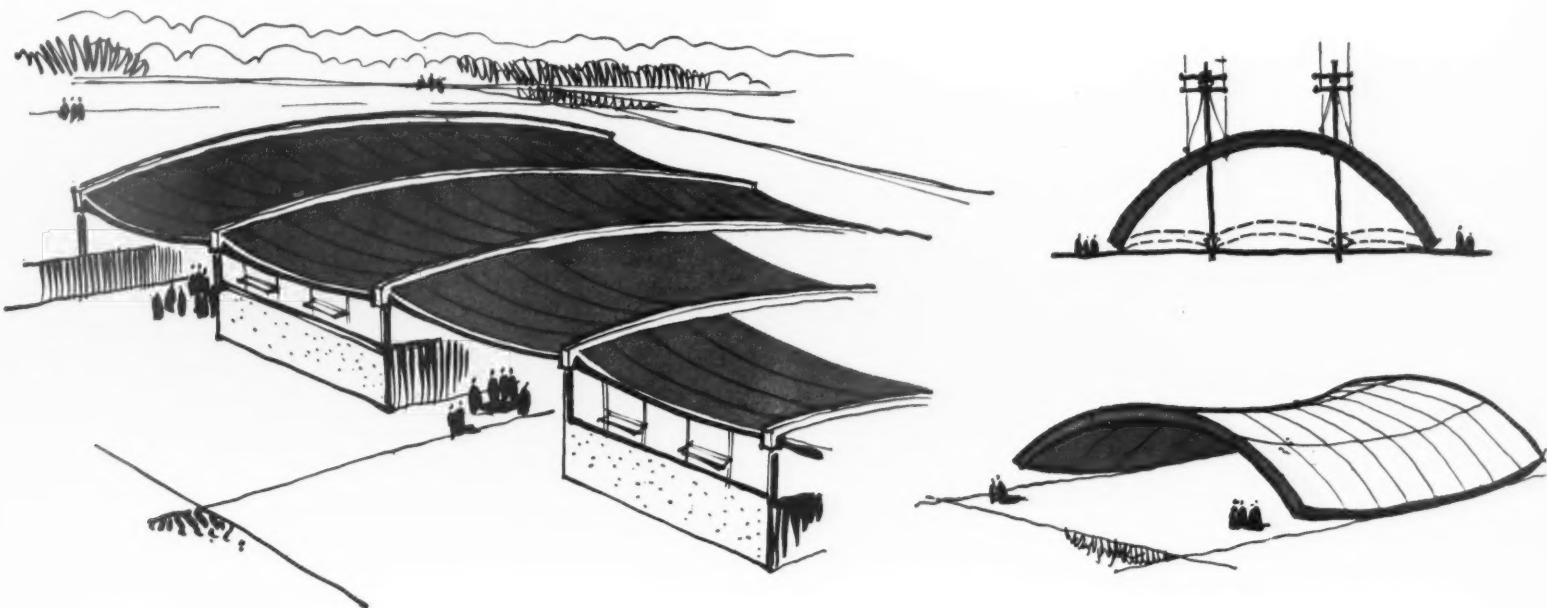


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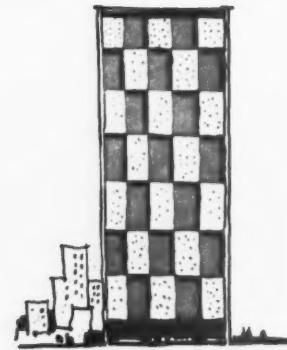
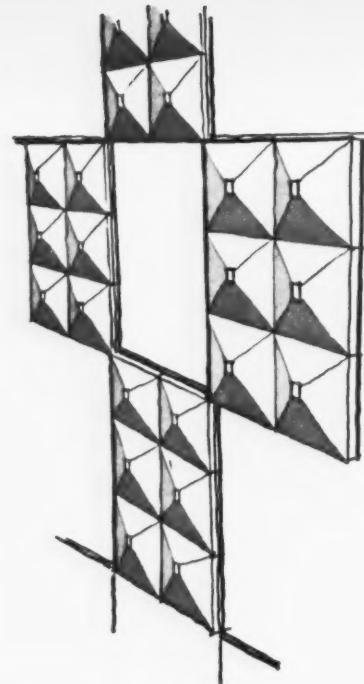
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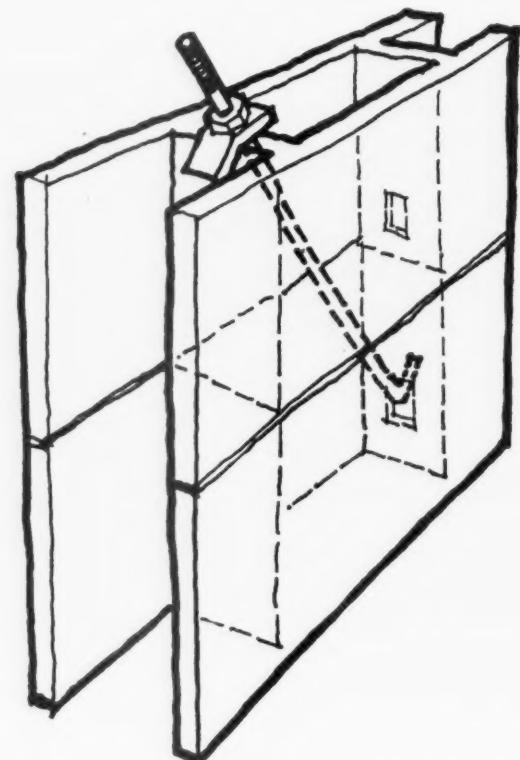
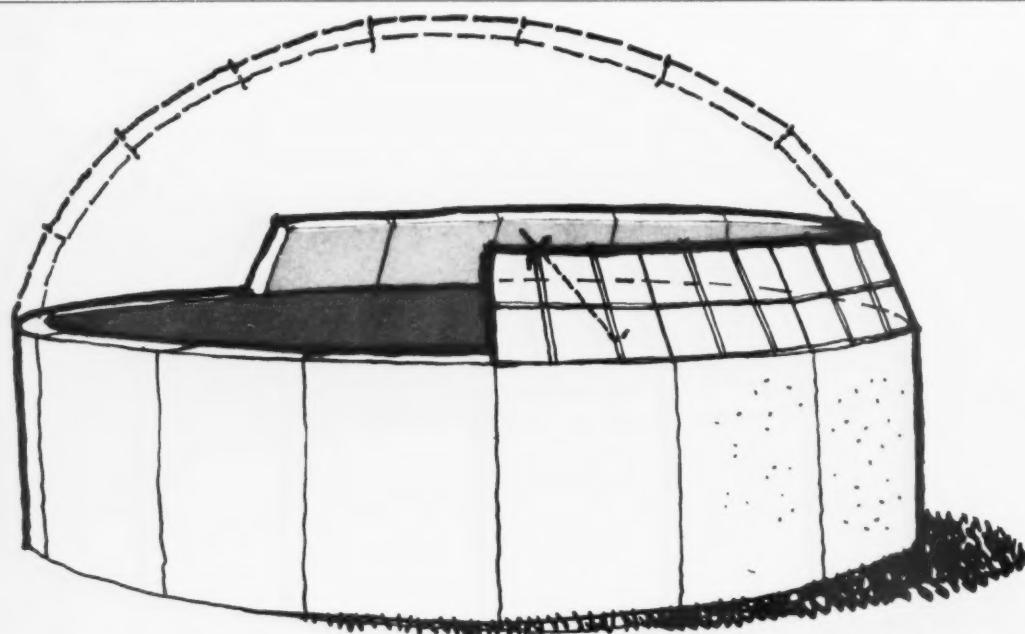
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**UNIT
MASONRY
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PRESTRESSING
TECHNIQUES**



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12

Drawings 4 to 12 by R. Corbelletti

FACETED GLASS

THE NEW LOOK IN STAINED GLASS WINDOWS

by John G. Lloyd*

Probably the most exciting of the new techniques in the ancient art of stained glass window making is the one variously known as faceted glass or chipped glass in concrete. Here one of the oldest methods of using colored glass in windows has been refined and modernized to fit the contemporary structure. As early as in the 5th and 6th centuries Byzantine craftsmen were taking the glass they used for mosaics and fitting it into the window openings. A faceted window, however, is not a "mosaic window." A mosaic is made to reflect light while a window transmits light.

Out of mind for over a thousand years, this ancient form was rediscovered in France about thirty years ago. Used to only a limited extent before World War II, it did not really attract attention until the start of the building boom that came with the end of the war. At that time American studios began experimenting in the medium.

Cast as dalles

Faceted windows do not use the antique *hand-blown* glass that goes into a traditional leaded window. Rather the identical antique pot-metal is poured into moulds approximately 8" to 10" square, and these form slabs or *dalles* an inch thick. At the present time the glass producing companies are turning out over 200 different colors in the slab form.

As in the execution of a leaded window the first step in faceted glass is for the artist to create the design and make the sketch. This comes about after careful studies of the building's requirements by the architect and window designer working together. Several rough sketches are usually required before a finished plan is developed and the final color sketch completed.

After approval by the architect and client the sketch is enlarged to a full size cartoon. A cartoon was originally an exact reproduction of lead lines in a stained glass window. In the case of faceted glass, it represents the binding (or separation) lines between the glass areas. From the cartoon an exact tracing is prepared on heavy paper; a paper pattern is then cut to the shape of each of the glass areas and secured in its proper place on the tracing.

Accent on color

The next phase of the process, selection of the glass, is both complex and important. The artist using the colored sketch as a model goes to the studio's glass stock and carefully studies the *Mr. Lloyd is editor of the quarterly magazine "Stained Glass."

wide range of shades in each of the colors to be used. Here the skills of the trained artist in glass are all brought into play, for he must not only know what colors can be used adjacent to each other, but also the effect that will be produced when light is transmitted through them.

For instance, a deep rich blue will diffuse its light over a wide area. In the window a large blue area will tend to dominate the scene and blend with other colors to form a mixed shade. Light through red glass tends to contract or "pull in"; thus a window with a predominant red theme must not be overpowered by other strong colors that will distort the original scheme.

Cutting methods

After the artist has selected the exact shades of glass to be used and marked their code number on the proper part of the pattern, the glass cutter takes over. Up to this point the processes are the same whether making a traditional leaded window or a faceted window. Now, however, the technique employed begins to differ.

The glass cutter can call on any of several methods to cut the thick slabs into pattern shapes. If an exact clean line is desired a motorized diamond-edged saw must be used. When the exactness of the cut is not essential, and this is true in most cases, the glass is placed on the edge of a chisel and fractured with a mason's or mosaic hammer. As a refinement, when longer straight lines are needed, a cutting or slicing machine can be used. Care must be exercised not to shatter the slab completely, although this will occasionally happen due to physical foibles in the glass structure.

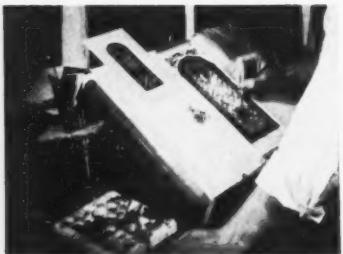
After each piece has been cut to its proper shape the glass cutter continues by chipping or *faceting* the edges of one side of the glass chunk. (This is the side that will be seen for the building's interior.) The faceting process can be extensive or slight depending on the effects desired. In any case it will produce the "jewel-like" qualities unique to these windows.

Assembly stage

The design-tracing is now laid out on a table and covered with a clear sheet of plastic. The chipped pieces of glass are placed in their proper places and secured with a light coating of rubber cement. The entire panel is then encompassed by a wood or metal frame, and thin reinforcing rods of steel, bent to conform to the design, are secured within the frame.



Recessed faceted glass window at Valparaiso University Chapel, Valparaiso, Indiana. Charles E. Stahde and Associates, architects. Design and execution of window by Conrad Schmitt Studios, Milwaukee, Wisconsin.



1	2
3	4
5	6

- 1 Several rough sketches are required before a finished plan is developed and the final color sketch completed.
- 2 Sketch is enlarged to full size cartoon, from which an exact tracing is made on heavy paper.
- 3 After glass pieces are cut to proper shape they are chipped or "faceted." The degree of faceting depends on the effects desired.
- 4 The glass chunks are placed properly on the design

tracing, which has been covered with a clear sheet of plastic. They are secured with a light coat of adhesive.

5 A binder is added. It is a special mixture of concrete or an epoxy compound.

6 Panel is ready for final treatment to ensure water-tightness. After mastic is applied, glass surfaces are cleaned and panel is ready for installation.

When this has been completed the pouring of the *binder* can start. The binding material will be either a special mixture of concrete or a powerful epoxy resin compound. Although commercial products are available many studios have developed their own formulas. A typical one might include cement, silicate aggregate, brown lake sand, and liquid latex. The idea is to produce a strong, durable finish that will be reasonably waterproof. When the epoxy is used in a relatively small panel the reinforcing rods need not be used.

Thickness of binder

Thickness of binder depends on the material and desired effects. Because of its strength (and, incidentally, higher costs), the epoxy compounds need not be more than $\frac{1}{4}$ " thick. The concrete can be poured to a depth of $\frac{3}{4}$ " allowing the glass to protrude slightly above it. A few studios have found it desirable to actually embed the glass an inch or more below the surface of the concrete. When this is done the glass does not require extensive faceting, as the light will not only be diffused as it passes through the glass but will also be reflected from the sides of the surrounding concrete.

Another method used on occasion is to lay down a very thin coating of the epoxy and then to place over it a thicker coating of cement. The two materials seem to adhere satisfactorily and a strong, waterproof finish is assured.

Because of its nature any surface finish or color can be applied to the binder. Color may be mixed into it, stone-like effects can be attained to match the surrounding walls, and complementing shades of color or mosaic may be inlaid into the surface to produce a reflecting image for night lighting effects.

After the binder has been poured and agitated sufficiently (in the case of concrete), to provide for solid adhesion, it must be allowed to set or cure for several days. Then the frame and plastic liner are removed, a waterproofing mastic applied to the joints and the glass surface cleaned. It is now ready for installation. Where the large opening are to be filled with many separate sections, metal frames will be needed. For smaller windows the panels can be set directly into the grooved masonry. A mastic type sealer is applied to complete the job. The faceted surface of the window always faces the interior.

Water seepage

Early installations of faceted glass soon showed the primary problems to be water leakage and cracking. Expansion and contraction problems had to be overcome, while the nature of standard concrete implied risk of a certain amount of seepage. Inspection and inquiry made at the site of some European jobs showed

little interest in these problems on the part of either producers or owners. They seemed to accept the drawbacks inherent with the material.

American studios realized, however, they could not operate on this basis and they set about solving the difficulties through experimentation. Now, for the most part, the technique has been perfected. Specially strong mixtures of cement incorporating waterproofing agents have been developed. Mastic compounds are used to coat the edges of the glass and the panels to take care of expansion and contraction, as well as to prevent leakage. Liquid silicon solutions can be applied directly to the surface of the binder to provide added strength and act as an additional sealant.

Epoxies

By using an epoxy resin compound some of the immediate difficulties never arise. Water cannot seep through the mixture after it has hardened and tests made on a few of the formulas have actually proved them to be stronger and tougher than the thick glass they hold, with the resulting bond almost becoming a fusion.

But a note of caution must be injected here, since most of these commercial compounds have not been in use long enough in windows to prove themselves. It will take a few more years of observation on the job to see how they hold up in the course of time.

Other considerations

Several additional points must be kept in mind when considering a faceted glass window. First, the medium does not lend itself to detailed, intricate designs. It works ideally with relatively simple patterns. Second, because of the intense brilliancy of the light transmitted, the space or bond between the glass can be unusually thick. Viewed with a dark background they may appear disproportionately wide, but with light shining through the glass the binding seams tend to disappear. Third, little or no paint is used on the glass to control the light. (Paint is sometimes used in stained glass for accent. It is applied after the glass is cut; glass is baked in a kiln, thereby assuring fusion of paint to glass).

Cost

Windows of this type cost less than good, highly detailed, painted stain glass done in the traditional manner. They are, however, comparable in price to a modern abstract designed window using large sections of glass with little paint. Rough estimates would place them in a category in the range between \$20 and \$40 per square foot.

This new technique for making colored glass windows is particularly well suited for simple, rugged concrete and cement block types of construction. The windows actually become a structural part of the wall. As regards size there are no restricting limitations.

LEFT CENTER

Riverside School,
Menomonee Falls, Wisconsin
Architect: Kloppenburg & Kloppenburg
Contractor: W. Schobert & Son, Inc.

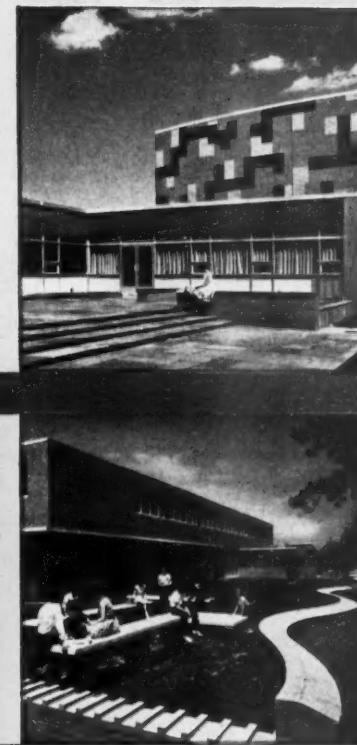
BOTTOM

Naugatuck High School
Location: Naugatuck, Conn.
Architect: Sherwood, Mills & Smith
Stamford, Conn.
General Contractor: Fusco-Amatruda Co.
New Haven, Conn.

TOP AND CENTER RIGHT

Drexel Hill Junior High School
Drexel Hill, Pa.
Architects & Engineers: The Ballinger Co., of Phila.
General Contractor: Wark & Co., of Phila.
Masonry Contractor: John B. Kelly, Inc., Phila.

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STRUCTURAL CLAY PRODUCTS

A SURVEY OF MODULAR PROGRESS

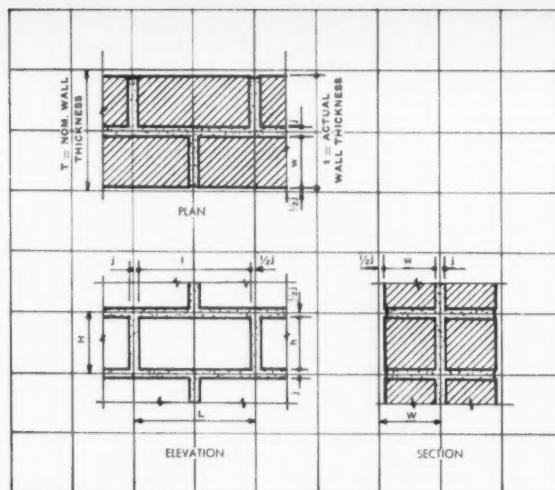


FIGURE 1.

MODULAR DIMENSIONS

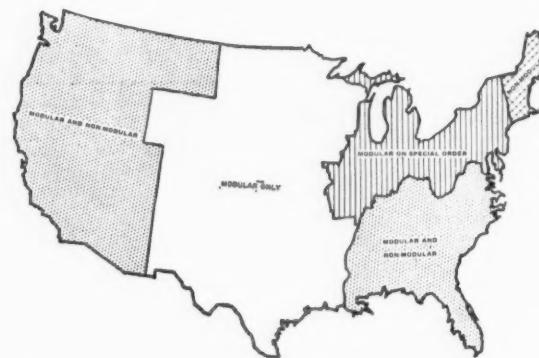


FIGURE 2. PRODUCTION OF MODULAR BRICK (JULY 1961)



FIGURE 3. PRODUCTION OF MOD. STRUCT. CLAY TILE (JULY 1961)

It is the custom of the Structural Clay Products Institute to keep track of progress in the availability of brick and structural clay building materials in modular sizes. The following report is based on a special survey carried out last month by SCPI. The report includes a review of joint coordination in modular construction.

Modular units are available in all regions of the United States, but not in all sizes listed. Thus, local availability must be determined, as shown below.

Modular clay masonry units are designated by their nominal dimensions. The nominal dimension of a masonry unit is equal to the standard or actual dimension plus the thickness of the mortar joint, with which the unit is designed to be laid, as illustrated in *Figure 1*. For example, a modular unit whose nominal length is 8" would actually be 7½" if the unit were designed to be laid with a ½" mortar joint, or 7⅜" if designed for a ⅜" joint. Capital letters signify nominal dimensions. Lower case letters signify standard or specified dimensions. Thickness of standard mortar joint is indicated by "j".

Actual unit dimensions may vary from standard or specified dimensions but not more than the tolerances for variations of dimensions permitted by applicable specification.

BRICK

Modular brick are produced for use with ⅜" or ½" joints with the exception of some glazed brick which are produced to be used with ¼" mortar joints.

Table 1 lists the sizes and names of modular brick currently widely available and the number of courses in modular dimensions.

Not all the above listed sizes are available in all sections of the country. *Table 2* lists the sizes produced, modular vertical coursing and the series designation. Auxiliary lengths, corner and jamb units and special shapes are also available.

FACING TILE

All ceramic glazed facing tile produced today are modular. They are manufactured for a ¼" mortar joint. *Table 2* lists the sizes produced, modular vertical coursing and the series designation. Auxiliary lengths, corner and jamb units and special shapes are also available.

Unglazed facing tile is produced in most colors and textures of brick. This production is modular, the nominal sizes are in most cases the same as for glazed facing tile shown in

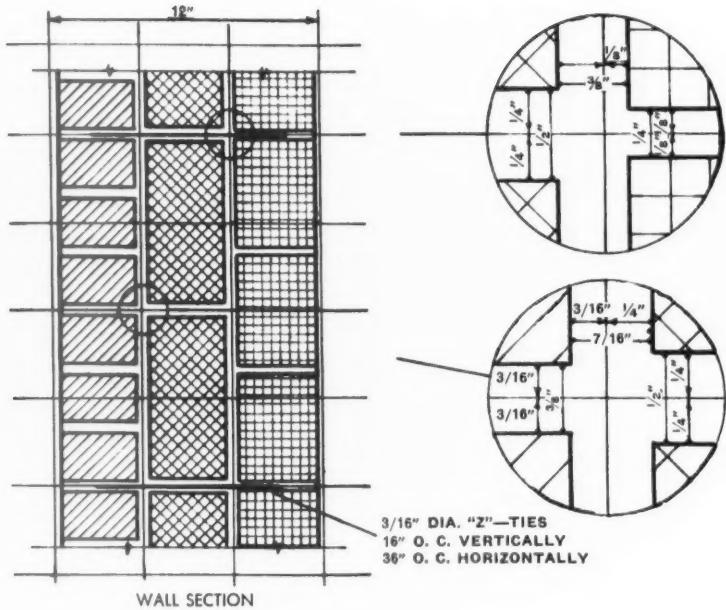


FIGURE 4.

COORDINATION OF MASONRY UNITS

Table 2. However, some of the unglazed facing tile units are manufactured for $\frac{1}{2}$ " and $\frac{3}{8}$ " mortar joints, while others are produced for $\frac{1}{4}$ " joints as is true in the case of glazed tile.

STRUCTURAL CLAY TILE

Load-bearing and non-loadbearing structural clay tile are manufactured for use as backup and for partition construction. Most of these units are manufactured for use with $\frac{1}{2}$ " mortar joints.

Non-load-bearing tile is produced in nominal face dimensions of 12"x12" and thicknesses of 2, 3, 4, 6, 8, 10 and 12 inches.

The widely produced sizes of load-bearing structural clay tile are listed in Table 3.

Figure 3 indicates the production of modular structural clay tile.

MASONRY UNIT COORDINATION

The coordination of different modular masonry products is shown in Figure 4. The exterior facing brick are shown with $\frac{3}{8}$ " joints. The facing brick are backed up with structural clay tile designed for use with $\frac{1}{2}$ " joints. The inside facing of glazed tile are laid with $\frac{1}{4}$ " joints. The full coordination between units is apparent as indicated in the enlargement: the thickness of the vertical joints between the different types of units is the average of the joint thicknesses used with each unit.

Information on the availability of specific products in a given locality is available at the national office of the Structural Clay Products Institute, 1520 18th Street, N. W., Washington 6, D. C.

TABLE 1
NOMINAL SIZES OF MODULAR FACING BRICK
(in inches)

Name	Thickness	Face Dimensions		Modular Coursing
		Height	Length	
Standard	4	2 2/3	8	3C = 8"
Engineer	4	3 1/5	8	5C = 16"
Economy	4	4	8	1C = 4"
Double	4	5 1/3	8	3C = 16"
Roman	4	2	12	2C = 4"
Norman	4	2 2/3	12	3C = 8"
Norwegian	4	3 1/5	12	5C = 16"
King Norman**	4	4	12	1C = 4"
Triple Brick	4	5 1/3	12	3C = 16"
SCR*	6	2 2/3	12	3C = 8"

* Reg. U.S. Pat. Off., SCPRF

** Also referred to as Norman Economy or General

TABLE 2
NOMINAL SIZES OF GLAZED FACING TILE
(in inches)

Series	Thickness	Face Dimensions		Modular Coursing
		Height	Length	
6P	2, 4, 6 and 8	4	12	1C = 4"
4D	2, 4, 6 and 8	5 1/3	8	3C = 16"
6T	2, 4, 6 and 8	5 1/3	12	3C = 16"
6M	2, 4 and 6	6	12	2C = 12"
4W	2 and 4	8	8	1C = 8"
8W	2 and 4	8	16	1C = 8"
6Y	2 and 4	12	12	1C = 12"

TABLE 3
NOMINAL SIZES OF LOAD-BEARING MODULAR STRUCTURAL CLAY TILE
(in inches)

Thickness	Face Dimensions	
	Height	Length
4	5 1/3 or 12	12
4	8	12 or 16
6	5 1/3 or 8 or 12	12
8	5 1/3 or 12	12
8	8	8 or 12 or 16
10	5 1/3 or 8 or 12	12
12	5 1/3 or 8 or 12	12

HOW WINDOWS FIGHT HEAT AND GLARE WITH NEW GREY GLASS PLUS SHADE DEVICES

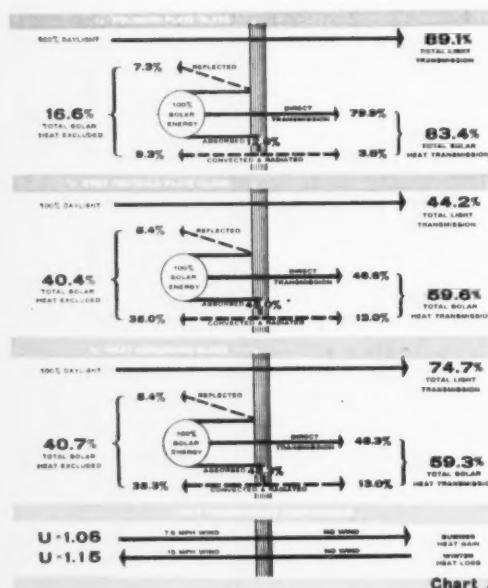


Chart A

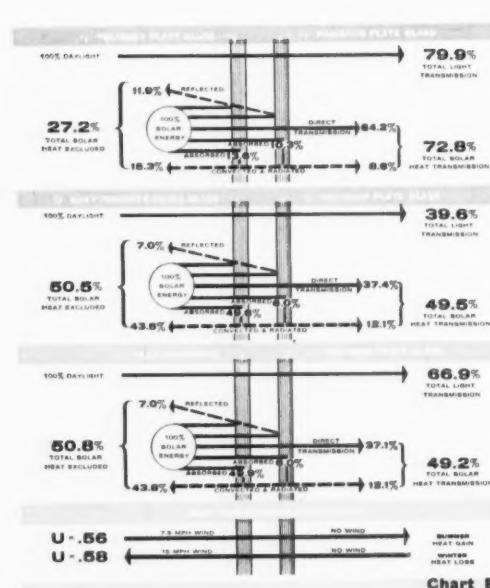


Chart B

How much heat and glare penetrate into a room depends on glass type and shading device. The following article, prepared by staff engineers associated with Libbey-Owens-Ford Company, discusses, quantitatively and qualitatively, how heat and glare are affected by the new grey glasses, first alone and then in conjunction with various types of shading devices.

Architects today draw from an ever widening and flexible product inventory when designing open plan buildings. In the flat glass field others have at their disposal a relatively new grey glass which is effective in controlling glare, brightness and sun heat, direct or reflected.

In addition to advantages in the field of visual comfort, heat absorbing characteristics of grey glass with appropriate shading devices provide savings in terms of lower costs for air conditioning equipment and cost of operation.

Two categories

There are a number of grey glasses available, each varying from the other in color density, depending on the source of its manufacture. They fall into two categories: sheet and plate glass.

Greater insight into the effectiveness of grey plate glass from a light and heat transmission standpoint can be gained by analyzing chart A, which compares, regular $\frac{1}{4}$ " polished plate glass, grey polished plate glass and heat absorbing plate glass. The last is a glare and heat absorbing variety of plate glass of special chemical composition, pale bluish-green in color.

Grey sheet glass, like its clear counterpart, does not undergo any further processing beyond its initial drawing. As a result it has a characteristic surface wave which becomes more apparent in larger sizes.

Grey plate glass, on the other hand, is ground and polished on both sides to assure more parallel surfaces, truer reflections and, being a tank glass, greater uniformity of color and quality. It is this type, with which this article will deal.*

*This article deals essentially with grey plate as manufactured by Libbey-Owens-Ford and a similar $\frac{1}{4}$ " grey plate made by another manufacturer. In addition, there are also a number of other grey plate glasses with similar characteristics made by other producers in varying thicknesses, and also in sheet glass.

As shown on the chart, $\frac{1}{4}$ " grey polished plate glass transmits approximately 44 per cent of average daylight as compared with a transmission of approximately 89 per cent through regular clear polished plate glass and approximately 75 per cent through heat absorbing polished plate glass of the same thickness. It is this lower light transmission which results in the subsequent reduction of glare and brightness. Grey plate's transmission of approximately 47 per cent of the total solar radiation (heat) is comparable to the performance of $\frac{1}{4}$ " heat absorbing plate glass. Both compare with a transmission of nearly 80 per cent by regular clear $\frac{1}{4}$ " plate glass.

These percentages are comparative, since all assume the sun's rays are perpendicular to the glass. Actually, for angles of incidence up to approximately 45 degrees these values are reasonably accurate. Convection and radiation gain are of course affected by inside and outside temperatures, air-flow velocities and other factors.

Infrared vs. total radiation

Values of infrared transmittance have not been dealt with in this case. Instead,

the figures of total radiation transmittance for solar energy are given for the following reason. Since infrared energy is most frequently measured by the heat it produces, and since this kind of radiant energy was discovered through its heating effect, it has come to be generally assumed that only the infrared produces heat. This assumption is not correct. All radiant energy may be converted into heat if it is absorbed, and none of it is truly heat until it has been absorbed and converted. There is more energy per wave in ultra-violet than in infrared and the visible also is more effective in producing heat than the infrared when it is absorbed. Solar energy is composed of approximately 50 per cent infrared and so it is not proper to compare the radiant energy transmitting properties of two glasses on the basis of their infrared transmittance alone.

Double pane insulation

Any review of the tinted glasses, be they grey plate or heat absorbing plate, must, in order to gain a complete picture of the part they can play in environment control, air conditioning cost and performance, consider also their efficiency



when used as one light in double-paned insulating glass. Modern glazing practices in curtain wall buildings have made this heat absorbing type of glass (outboard) combined with a clear light (inboard) almost synonymous with efficient glare and heat control. This is especially true in geographical areas where winter heating economies must be considered as well as summer cooling savings (see chart B).

For example, $\frac{1}{4}$ " grey plate glass excludes approximately 40 per cent of total solar energy. This compares with only 17 per cent exclusion by regular plate glass of the same thickness. With 1" insulating glass, however, the added barrier afforded by the sealed-in air space raises the solar energy exclusion of the grey plate glass unit to 51 per cent, a significant increase over the 27 per cent for insulating glass made from regular clear plate glass. For example, for conditions calculated for August 1 at 4 p.m., grey plate glass reduces heat gain due to transmitted and absorbed solar energy from 183 Btu to 126 Btu per square foot. Grey plate insulating glass, on the other hand, would reduce the heat gain from 183 Btu to 95 Btu per square foot.

Case history

In recent studies of the 15-story Libbey-Owens-Ford Building in Toledo, Ohio, a curtain wall structure with 77 per cent of the gross wall area comprised of vision glass, the effectiveness of grey plate insulating glass on air conditioning and heating costs is evident.

Walls of the structure are oriented approximately 30 degrees counterclockwise from the cardinal directions. Vertical venetian blinds are used in all vision areas above the ground floor. Approximately 57,600 sq. ft. of glass was used in the building, equally divided at 14,400 sq. ft. per exposure.

Calculations by Guy B. Panero Engineers show that the use of grey plate insulating glass as compared to a single pane of grey plate, reduced the air-conditioning requirement by 92 tons. This lowered the initial cost of air-conditioning equipment by an estimated \$55,200.

Projecting the study still farther, it was next found that operating costs on the same comparison should bring an annual reduction of \$2,190 for air conditioning and \$5,030 in heating costs. This combined saving of \$7,200 plus the \$55,200 would pay for the premium cost of the insulating glass in $3\frac{1}{2}$ years.

These studies also show that if the additional capital cost of the double insulating glass used as compared with single glazing of grey plate and the extra cost for the air-conditioning equipment required if single glazing has been used, were both considered as investments at 3 per cent, then a cost comparison for this portion of the building shows that it would be more economical to use grey plate insulating glass than to use single glazing of grey plate.

When an architect has the opportunity to control the location and orientation of a free-standing building, he can influence year around air conditioning costs by:

- 1 favorably locating the major glass areas,

- 2 taking advantage of any natural shade, minimizing cooling loads by using grey or heat absorbing glass either in single panes or incorporated in insulating glass,
- 3 through the use of exterior or interior shading devices.

A combination of the proper glass and the most feasible shading device can result in the optimum in sun and heat control conditions, and therefore should be considered as a closely allied unit.

Shading devices

Shading requirements frequently will vary with orientation, latitude, and the time of year because of the variation in the position of the sun relative to the glass. An awning which allows venting of the space beneath it, or exterior opaque slats arranged to provide shade and ventilation will be more effective in reducing solar gain to the inside of the building than any commonly used inside shading device.

Heat absorbing glass not only in window areas, but also in the form of exterior louvres is effective in reducing heat gain. Vertical heat absorbing glass panels outside, parallel and at some distance from the windows are also excellent. The solar energy absorbed by either of these devices will be largely convected and radiated to the outside air and will therefore not contribute to the cooling load.

Manually operated exterior shading devices are generally impractical for large buildings with many windows. Fixed shades designed as an architectural part of the building may be very effective, but when used should be so arranged as to avoid such problems as difficult window washing, obstruction of fire ladders, and the blocking of windows as exits in emergencies.

SHADING COEFFICIENTS		
	GLASS IN SUN	GLASS IN SHADE
White Venetian Blinds		
Regular plate or window glass	.55	.60
Grey plate* glass	.53	.52
Regular insulating glass	.51	.51
Grey plate* insulating glass	.36	.36
Green Venetian Blinds		
Regular plate or window glass	.64	.66
Grey plate* glass	.57	.58
Regular insulating glass	.57	.55
Grey plate* insulating glass	.39	.38
Dark Grey Draperies		
Regular plate or window glass	.62	.55
Grey plate* glass	.48	.43
Regular insulating glass	.56	.51
Grey plate* insulating glass	.38	.34
Tan Draperies		
Regular plate or window glass	.53	.47
Grey plate* glass	.43	.39
Regular insulating glass	.51	.46
Grey plate* insulating glass	.35	.32
Off-White Draperies		
Regular plate or window glass	.44	.39
Grey plate* glass	.39	.35
Regular insulating glass	.43	.39
Grey plate* insulating glass	.32	.29

*Values for Grey plate apply equally to green-tinted heat-absorbing plate.

Projecting eaves or balconies at every floor will be satisfactory for windows facing south, but of little value on west exposures because the altitude of the afternoon sun is too low to have its rays intercepted by horizontal overhangs. A combination of an opaque horizontal overhang and a vertical panel of heat absorbing glass has provided an ingenious system for minimizing heat gain on all sun exposures.

Exterior vs. Interior shading

Exterior shading is generally more costly, though more effective than interior shading. Whether or not the greater savings produced will offset the greater cost is a matter of professional judgment based on extensive economic study of individual installations. Inside shading devices can only intercept radiant energy after it has passed through the glass and can eliminate only that percentage which can be reflected out through the glass. Some of the energy striking an inside shade is absorbed, and is convected and radiated into the interior space.

The effectiveness of various glass and inside shade combinations will depend on the transmittance of the glass and the type and color of the shading device used, and may be expressed as Shading Coefficients.

Shading coefficient

The Shading Coefficient is the ratio of (a) the solar heat gain due to transmitted and absorbed solar radiation by the combination of glass and shading device under consideration to (b) the heat gain due to transmitted and absorbed solar radiation by unshaded regular window glass.

To indicate the effectiveness of various

glass and shading combinations a number of Shading Coefficients has been calculated with the values related to a value of 1.00 for unshaded regular DS window glass. From the above table, notice that the combination of grey plate insulating glass with off-white draperies reduces heat gain due to solar energy to 32 per cent of that through unshaded regular window glass.

Translating these figures into conditions in a typical office building, in a strip 15 feet deep and one foot wide along the perimeter of the building, the heat gain from all interior sources such as occupants, artificial lights and electrical equipment, plus the outdoor air brought in for ventilation, may be about 425 Btu per hour. (see chart C).

Compared to this, a continuous south-facing window of single regular plate glass 6 feet high would impose an additional heat load in August of about 420 Btu per hour if shaded with inside white Venetian blinds.

The same window using grey heat absorbing insulating glass with the same shading would reduce this heat gain from 420 to 280 Btu per hour. Thus, the solar gain from windows of single regular plate glass with venetian blinds constitutes about 50 per cent of the total heat gain in August. The same window of grey heat absorbing insulating glass with the same shading would reduce this to about 39 per cent. The use of an outside shade would reduce these percentages further to about 27 per cent and 19 per cent respectively.

In summary, the architect, in his choice of interior shading devices, should consider both their appearance and their effectiveness.

PRODUCTS, EQUIPMENT, MATERIALS

Report of recent developments by industry, based on data furnished by manufacturers. Inquiry cards for further information face pages 1 and 66.



NEW SECTION DESIGN IN PRE-STRESSED CONCRETE

MFR'S DESCRIPTION: new design in a pre-stressed concrete section.

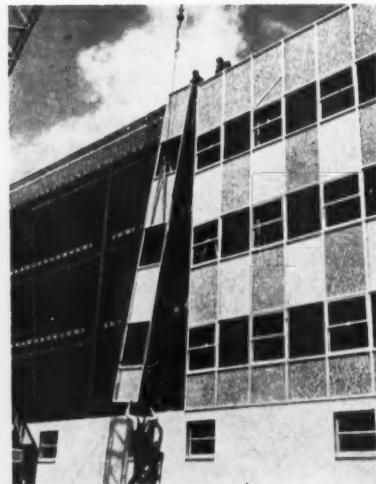
USES: general.

SPECS/FEATURES: section's deck is 2" thick to allow architect more flexibility in designing. Exposed beam is 10" deep and 4" wide. Member is 64" wide and available in lengths up to 40'. Exposed beams form a ceiling. Company claims new pre-stressed concrete section speeds construction by as much as 40%. Section is delivered to job-site ready for use.

AIA FILE NO. 4-E-12

MFR: HI-STRESS DIV., ANCHOR-WATE CO.

Circle 200 for further information



MOSAIC TILE PANELS FOR MULTI-STORIED USE

MFR'S DESCRIPTION: curtainwall panels including mosaic for outer wall, with expanded polystyrene core and interior wall delivered ready for installation.

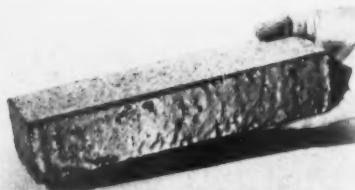
USES: curtainwall construction.

SPECS/FEATURES: curtainwall panels with exterior surfaces of vitreous glass mosaics imported from Italy and placed by hand in random pattern. Using panels fabricated by Asco Window Corp., manufacturer places mosaic tile pattern in place according to specifications of architect. Random or specific patterns may be used.

AIA FILE NO. 17-A

MFR: CASAVAN INDUSTRIES

Circle 201 for further information



GLAZED FACE BRICK LINE

MFR'S DESCRIPTION: textured ceramic coating on Norman-size bricks.

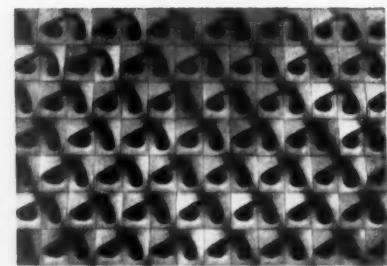
USES: commercial and institutional.

SPECS/FEATURES: line of bricks offers a wide choice of colors in this traditional facing material. Twenty-five standard colors are available in bright glaze, satin or matte finish. Can be utilized as part of structural wall, since the glazed brick can be used for the outer layer of a reinforced brick wall. Ceramic glazed surface designed for low maintenance and stable color.

AIA FILE NO. 3-F-2

MFR: GLADDING, MCBEAN & CO.

Circle 202 for further information



PIERCED SCREEN WALL OF SCULPTURED CLAY

MFR'S DESCRIPTION: a ceramic pierced screen wall.

USES: interior and exterior walls and partitions.

SPECS/FEATURES: screen consists of individual 9½" x 12½" blocks and is designed as a complex arrangement of open work and solid mass. Screen is designed so there is a different visual effect from every vantage point. Blocks are made with a keying channel which accepts standard ¾" pipe and is designed to be constructed without utilizing mortar. Edge of each block holds pipe in the channel so that piping is concealed. General installation is in unglazed gray clay,

but patterns are available in a large range of clay colors and matt or glossy glazes. Manufacturer also specializes in custom designed clay and ceramic products varying from walls and store fronts to custom designed tile and numerous accessories.

AIA FILE NO. 3-G/23-A
MFR: DESIGN-TECHNICS
Circle 203 for further information

ITALIAN STYLE TERRAZZO TILE

MFR'S DESCRIPTION: authentic Italian type terrazzo tile line.

USES: interior and exterior surfacing.

SPECS/FEATURES: tile is produced with a wide variety of aggregates in medium and Venetian patterns for walls and floors. Line has a light-weight concrete backup, reducing weight in high-rise installations. Surface aggregate varies from chips to large pieces of sawn marble as specified by architect. Matrix colors are controlled through choice of white or grey cement and use of colored oxides. Controlled grinding prepares material for exterior walking surfaces or highly polished interior floors and walls. Color range and combinations available from a wide selection of aggregates. Tile is offered in three sizes: 10"x10"x $\frac{7}{8}$ ", 12"x12"x1" and 16"x16"x $\frac{1}{8}$ ".

AIA FILE NO. 23-A/E
MFR: BASALT ROCK COMPANY, INC.
Circle 204 for further information

ASBESTOS-CEMENT TILE FOR DECKING OUT ROOF

MFR'S DESCRIPTION: new asbestos-cement tile transforms built-up roofing surfaces into serviceable areas.

USES: turning flat roofs into sun decks.

SPECS/FEATURES: tile designed for heavy foot traffic is highly heat-reflective and protects roofing felt from weather. Tile is installed on a trowelled-on cold asphalt cement base in an operation similar to installing interior plastic tile. Manufacturer claims tile can be cut with a hack saw or scored for breaking, and can be fitted close around irregular shapes and projections.

AIA FILE NO. 12-E
MFR: KEASBEY & MATTISON CO., INC.
Circle 205 for further information

MOSAIC PATTERNS IN METAL WALL TILES

MFR'S DESCRIPTION: metal wall tile with mosaic patterns for decorative flexibility.

USES: residential and commercial.

SPECS/FEATURES: mosaics are prefabricated at plant for simpler installation in panels measuring 8 $\frac{1}{2}$ "x8 $\frac{1}{2}$ ". Each panel consists of eight 2 $\frac{1}{8}$ "x2 $\frac{1}{8}$ " tiles. While company maintains a standard line of patterns, color and

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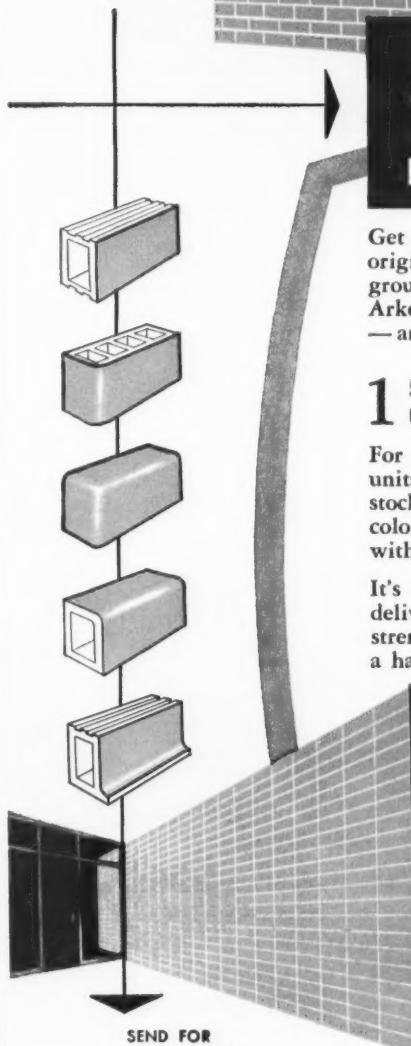
1 SPECIFY THESE MAXIMUM ECONOMY PRODUCTION UNITS — STOCKED FOR IMMEDIATE DELIVERY

For lowest material costs, build with the special, one-color group of units that Arketex stocks in volume for prompt shipment. This in-stock series provides all basic shapes necessary for a finished job. The color is a warm, creamy beige that stands on its own, and blends well with nearly all floor and ceiling treatments.

It's the maximum economy group in the big Arketex line. Yet it delivers the full benefits of a quality Arketex wall: load-bearing strength — permanent color — high fire and chemical resistance — a hard, impervious surface for easy cleaning and sanitation.

2 USE MODERN, MONEY-SAVING STRAIGHT LINE

DESIGN: For lowest in-wall costs, utilize the techniques outlined in the free Arketex booklet, "Straight Line Design." This straightforward building method achieves its economies through the use of Arketex volume-manufactured tile and simplified detailing. The result is clean, modern design — with ample flexibility for individual adaptations.



ARKETEX CERAMIC CORPORATION, Brazil, Indiana

Gentlemen:

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FIRM.....

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CITY..... STATE.....



Circle 112 for further information



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Send specification brochure showing all Mastipave types, colors.

NAME _____ TITLE _____

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Circle 113 for further information

30

pattern selections can be varied. Company maintains specialists to advise on selection.

AIA FILE NO. 23-K-1

MFR: VIKON TILE CORPORATION.

Circle 206 for further information

SPANDREL PANEL WITH POLISHED GLASS

MFR'S DESCRIPTION: glass spandrel for curtain wall construction combines polished outer surface with metallic-faced inner surface.

USES: curtain wall construction.

SPECS/FEATURES: for applications where a polished glass spandrel panel is desired, item provides a glass spandrel with insulating value of a metallic aluminum backing which helps reflect heat. Both polished and patterned panels are available in a variety of colors. Ceramic enamel is applied to inner face of glass panel and aluminum backing is bonded over it.

AIA FILE NO. 26-A-5

MFR: AMERICAN-SAINT GOBAIN CORP.

Circle 207 for further information

INDOOR-OUTDOOR CLOCKS WITH A CERAMIC FACE

MFR'S DESCRIPTION: ceramic faced clock line for indoor-outdoor use. USES: residential and commercial.

SPECS/FEATURES: nine clocks in line offer a variety of geometric shapes and abstract forms on handcrafted ceramic faces. Clocks vary from 11" to 14" in diameter and from 2" to 2 1/4" in depth. Clocks are available powered by electricity or battery. Weatherproof insulated case for either battery or electric clock is optional.

AIA FILE NO. 35-N-4

MFR: HOWARD MILLER CLOCK CO.

Circle 208 for further information

GLASS PANEL HIKES DIFFUSION AND HIDES LAMPS

MFR'S DESCRIPTION: lighting panel for fluorescent fixture applications.

USES: luminous ceilings.

SPECS/FEATURES: lighting panel is a rolled sheet, non-patterned, opal base glass with a special surface treatment designed to increase light diffusion and lamp hiding power and to help eliminate surface reflection. The combination of opal glass and surface treatment helps obtain an even surface illumination. Panel available up to 100" long and 48" wide. It is 1/2" thick and weighs 1.8 psf.

AIA FILE NO. 26-A-5/9

MFR: CORNING GLASS WORKS

Circle 209 for further information

SOUND ABSORBING GLASS CUTS NOISE BY 66%

MFR'S DESCRIPTION: glass controls sound transmission in frequency range of 1700 to 4000 cps.

PRODUCTS, EQUIPMENT, MATERIALS

USES: commercial, industrial and institutional.

SPECS/FEATURES: safety sound absorbing glass offer excellent visibility and converts sound energy into small amounts of heat instead of passing it through the glass. Reducing noise intensity level by as much as 66%, glass can be cut, ground and polished to specific design requirements, and dimensional errors can be corrected on job-site with no warpage or process distortion. Item is available in clear, opaque and in grey or blue tint in sizes up to 80"x120".

AIA FILE NO. 26-A-9

MFR: AMERADA GLASS CORP.

Circle 210 for further information

CERAMIC TILE PATTERN FOR MODERN ARCHITECTURE

MFR'S DESCRIPTION: ceramic tile pattern in new colors.

USES: interior tiling.

SPECS/FEATURES: pattern with eleven color combinations surrounded by white and sprinkled with a gold leaf effect on dark-toned tiles. Colors designed to match, blend or contrast with popular contemporary colors. Pattern is a $\frac{3}{8}$ "x $\frac{3}{8}$ " tile in 1' sq. sheets. Backing eliminates use of protective paper.

AIA FILE NO. 23-A

MFR: AMSTERDAM CORPORATION

Circle 211 for further information

STONE/BRICK/CEMENT

LATEX ADDITIVE REDUCES MORTAR WATER SEEPAGE

MFR'S DESCRIPTION: special latex additive for portland cement mortar.

USES: bonding Styrofoam insulation boards to masonry, cured concrete, metal, or other surfaces.

SPECS/FEATURES: synthetic latex particles in product greatly increase mortar adhesion, reduce water and water vapor transmission through mortar, and result in over-all stronger and tougher mortars, according to the company.

AIA FILE NO. 3-B-2

MFR: DOW CHEMICAL CO.

Circle 212 for further information

PREBLEND CEMENT FOR INSTANT MORTAR

MFR'S DESCRIPTION: preblended cement mortar that, with the addition of water, is ready for use.

USES: cement mortar applications.

SPECS/FEATURES: product is designed to answer problems in constancy of blending, labor, and time saving. Performance tests exhibited compressive strengths as high as 8,120 psi for mortar made with this product. Waterproofing tests (in accord-

ance with ASTM C-270), showed water retention characteristics to be in the 75 to 83 per cent range. A maximum of 4 per cent absorption was recorded in the tests made in accordance with federal specification SSC-181 c.

AIA FILE NO. 3-A-9

MFR: INSTANT CEMENT CORP.

Circle 213 for further information



PRE-CAST STONE PANELS NAIL IN PLACE

MFR'S DESCRIPTION: panels of individual pieces of pre-cast stone.

USES: veneers.

SPECS/FEATURES: pre-cast stones about 1" thick are bonded to fiber board. Variety of faces and patterns are used to gain random effect. Panel dimensions are 14"x32". Several color combinations and blends are available. Material is recommended by manufacturer for residential and commercial structures, for exterior and interior use. No special foundation required.

AIA FILE NO. 8-B-9

MFR: TERRA INDUSTRIES, INC.

Circle 214 for further information

SILICA BRICK LINE IN EIGHT COLORS

MFR'S DESCRIPTION: a line of silica brick offered in eight colors.

USES: masonry construction.

SPECS/FEATURES: colors are white, salmon, pink, red, tan, yellow and green. Bricks are designed for easy handling by masons with a smooth texture and square, clean edges, according to manufacturer. Brick is available in three sizes: 2 $\frac{1}{4}$ "x3 $\frac{5}{8}$ "x8", 2 $\frac{5}{8}$ "x3 $\frac{5}{8}$ "x8" and 2 $\frac{3}{4}$ "x3 $\frac{5}{8}$ "x8". Brick line meets standards set by various public agencies.

AIA FILE NO. 3-F-2

MFR: NATIONAL BRICK CORPORATION

Circle 215 for further information

OFFICE AIDS

COMPUTER SERVICE CENTER FOR ARCHITECT & ENGINEER

MFR'S DESCRIPTION: service organization, utilizing computers to help solve architectural and engineering problems in minimum time.

USES: design computations.

SPECS/FEATURES: architect or engi-

neer feeds a pre-punched tape with the problem into an automatic typewriter in his office; service's office punches a duplicate tape on their automatic typewriter and feeds it into computer, obtaining results in a few minutes. Service's office then calls office of architect or engineer and feeds solution into typewriter; computed information is then printed out on architect's or engineer's typewriter in final report form.

AIA FILE NO. N/A

MFR: COMPUTERMAT, INC. (a service organization)

Circle 216 for further information

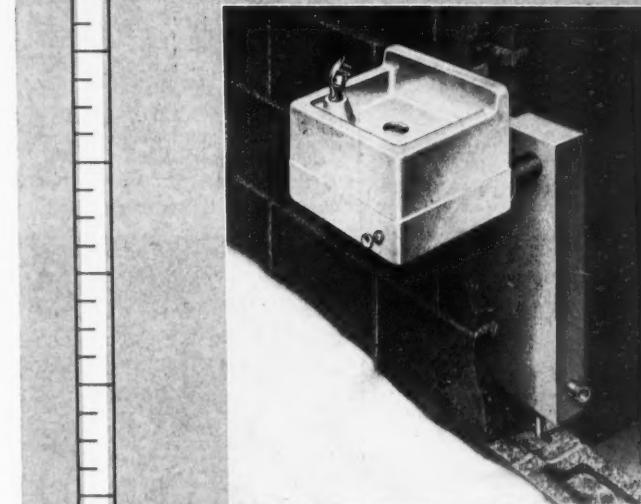
GRAPHING INSTRUMENT AIDS DRAFTING

MFR'S DESCRIPTION: plastic chart, measuring 4"x8", with a variety of scales on both sides.

USES: drafting.

SPECS/FEATURES: instrument converts plain sheet of paper into a plot with linear or logarithmic scales of any length, number of cycles, scale modulus, or configuration (rectangular, polar, etc.), as required. Twelve cycles and three linear scales are arranged around periphery. Two triangular charts provide an infinity of precision divided scales of varying

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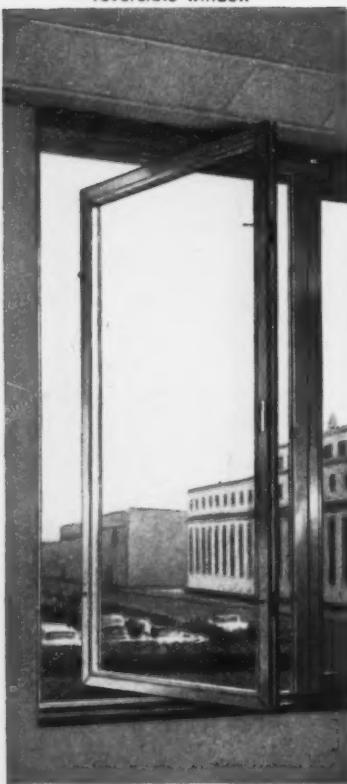
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Circle 114 for further information

reversible window



ELEGANCE

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Circle 115 for further information

PRODUCTS, EQUIPMENT, MATERIALS

moduli. Custom scale ranges, cycles, and boundaries are easily established, and points plotted directly. Instrument is made of *Vinylite*, and punched for insertion in a 3-ring notebook.

AIA FILE NO. 35-H-3
MFR: TECHNICAL MARKETING ASSOCIATES, INC.

Circle 217 for further information

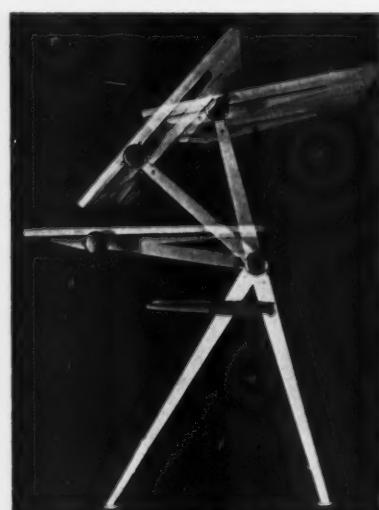
OFFICE PAPER SHREDDER MAKES THINNER SHREDS

MFR'S DESCRIPTION: new model office paper shredder that destroys confidential records into extremely thin shreds.

USES: destruction of confidential papers.

SPECS/FEATURES: with one push button and absolute safety, manufacturer says, this model converts papers into super-fine shreds of 22 per inch or $\frac{3}{4}$ " wide shreds. Model has a movable cabinet and removable waste-bin for shreds. Cutting mechanism not damaged by paper clips and fasteners. Shredder operates on 110 volt AC and weighs 71 lbs.

AIA FILE NO. 35-J-4
MFR: MICHAEL LITH SALES CORP.
Circle 218 for further information



DRAWING TABLE DESK OF NEW DESIGN

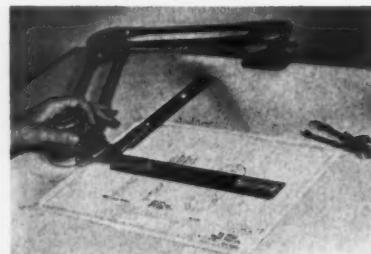
MFR'S DESCRIPTION: multi-purpose metal unit is lightweight and easy to handle.

USES: drafting.

SPECS/FEATURES: adjustable from a height of 30" to 46", unit can be fixed at any intermediate position and adjusted to any inclination. Regardless of position, unit remains level and rigid. An adjusting device on one leg permits adaptation to any floor condition. One adjusting knob regulates

height, and another knob allows adjusting of back to any desired angle. Table weights 44 lbs., is equipped with drafting board 30"x40", and a detachable tray for drawing instruments.

AIA FILE NO. 35-H-3
MFR: D-H ASSOCIATES
Circle 219 for further information



DRAFTING MACHINE FOR DESK AND TABLE

MFR'S DESCRIPTION: new compact, desk and table-top drafting machine.

USES: home and office.

SPECS/FEATURES: item designed for architects who have only occasional need for drafting board. Combining capabilities of T-square, straight-edge, triangle, scale and protractor, item features controls that permit one-hand operation. Bracket assembly facilitates temporary or permanent mounting on most desks, tables or boards. Operates efficiently on any drawing board inclined at any angle up to 20° and will accept any scales with standard chuck plates. Control head has full 360° indexing with automatic 15° stops, a rapid release for intermediate settings, and a convenient lock for intermediate setting of protractor and vernier.

AIA FILE NO. 35-H-3
MFR: KEUFFEL & ESSER CO.
Circle 220 for further information

PLUMBING

AUTOMATIC SHOWERHEADS WITH CONTROLLED FLOW

MFR'S DESCRIPTION: new line of showerheads with built-in, automatic controls.

USES: residential and industrial.

SPECS/FEATURES: models include five showerheads and range from a non-adjustable economy type to an adjustable deluxe line. Shower control, an automatic flow regulating valve, consists of a flexible orifice which varies its size uniformly and inversely in proportion to water pressure. Various models control water flow at pre-set designations to help insure economies in hot and cold water use and to obtain a standardized water flow. Showerheads are de-

signed for attachment to existing installations.

AIA FILE NO. 29-H-3
MFR: THE DOLE VALVE COMPANY

Circle 221 for further information

SCALD PROOF SHOWER VALVE

MFR'S DESCRIPTION: balancing line valve, operated by water pressure maintaining constant water temperature.

USES: residential plumbing.

SPECS/FEATURES: valve insures use of water in other parts of residence will not scald a person in shower. Valve's piston moves back and forth, decreasing or increasing hot or cold water flow, depending on pressure changes in supply line.

AIA FILE NO. 29-B-4
MFR: TEMPRA CORP.
Circle 222 for further information

WATER HEATERS WITH COPPER TANKS

MFR'S DESCRIPTION: line of gas water heaters.

USES: commercial.

SPECS/FEATURES: line features a new copper tank that, according to the company, is highly corrosion-resistant. Utilizes hourly heat inputs from 55,000 to 360,000 BTU and delivers from 46 to 300 gallons at 100° F temperature rise.

AIA FILE NO. 29-D-2
MFR: RUUD DIV, RHEEM MANUFACTURING CO.

Circle 223 for further information

ELECTRICAL

BUSWAYS LINE IMPROVED IN NEW CONSTRUCTION

MFR'S DESCRIPTION: an improved line of feeder and plug-in busways featuring a new type of construction.

USES: electrical installations.

SPECS/FEATURES: manufacturer says new construction provides four major benefits: 1. higher insulation efficiency; 2. greater inherent safety; 3. lower weight; and 4. increased resistance to damage from electrical stresses or improper handling. Available in ratings from 60 to 4,000 amps, manufacturer's line of busways are fully enclosed sources of light and power supply which are tapped through standardized plug-in connections.

AIA FILE NO. 31-C-621
MFR: ELECTRIC DISTRIBUTION PRODUCTS, INC.

Circle 224 for further information

COLOR-CODED CONDUITS FOR INDUSTRIAL USE

MFR'S DESCRIPTION: rigid steel conduits in five colors with matching elbows and couplings.

USES: industrial.

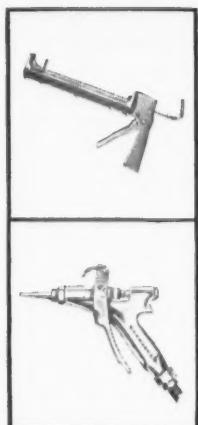
Circle 117 for further information about YOUNGSTOWN, pp. 34-35 →

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WITH 5 TIMES THE PERFORMANCE LIFE**
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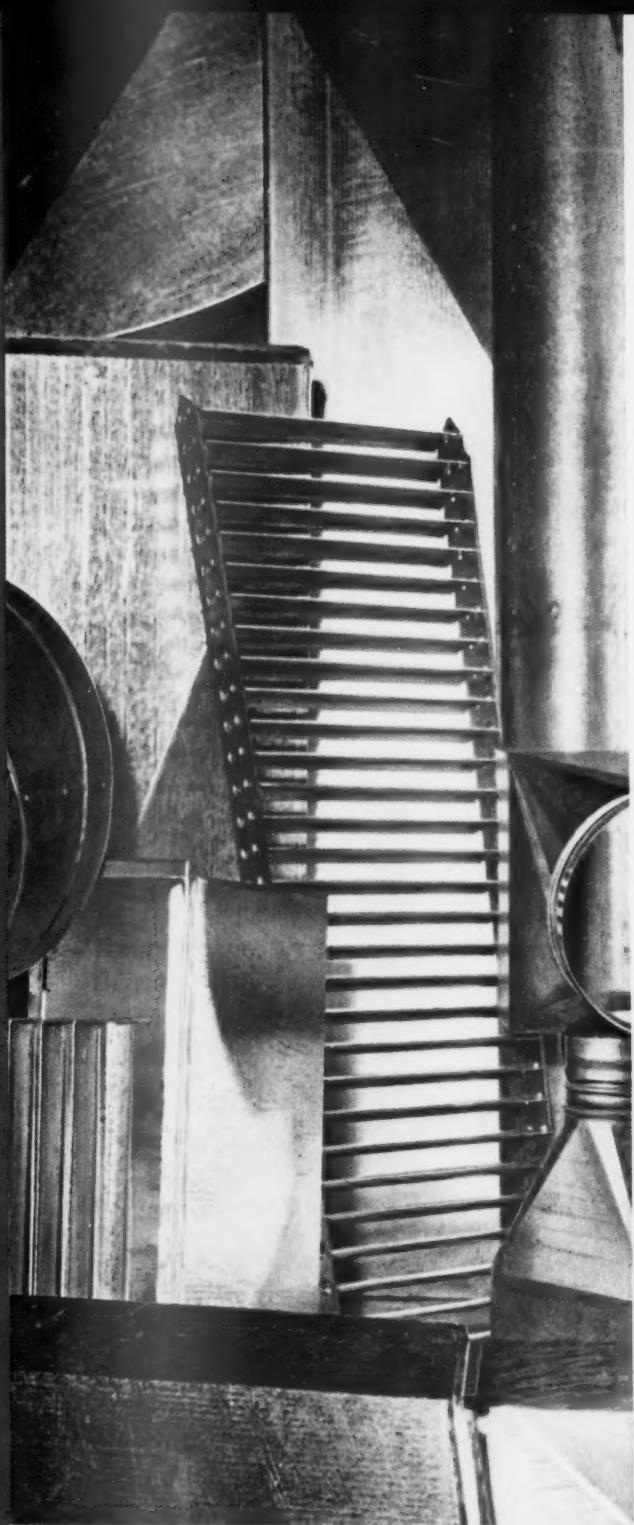
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Circle 116 for further information





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finest mill

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For full details on Youngstown **tufkote** galvanized sheet, write: Dept. 10-C
The Youngstown Sheet and Tube Company, Youngstown, Ohio





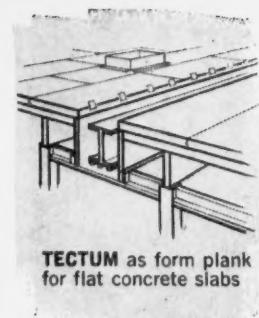
TECTUM Roof Deck
and Form Plank over
steel joist or beam



TECTUM Roof
Deck and Form Plank on
bulb tee subpurlins



TECTUM Roof Deck
on box section subpurlins



TECTUM as form plank
for flat concrete slabs



TECTUM as form plank
for concrete pan system



TECTUM Form Plank
for thin shell
concrete designs



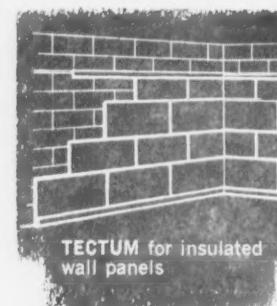
TECTUM as form plank
for precast forms



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ceilings



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non-bearing
partitions



TECTUM for
insulated
wall panels



TECTUM for
bar joist fill



TECTUM for sandwich
panels and other core
material uses

How many ways have you used

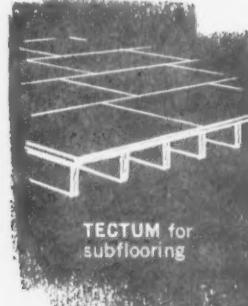
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Tectum's multiple values have prompted many unusual applications. Inherent structural, insulating, sound absorbing, noncombustible and light weight qualities fit countless job classifications. And its richly textured surface and excellent light reflectivity are truly plus features.

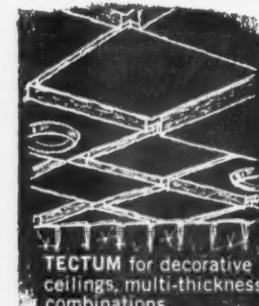
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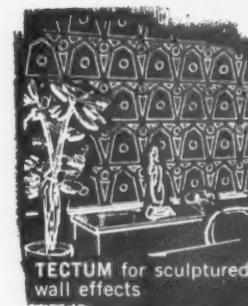
Circle 118 for further information



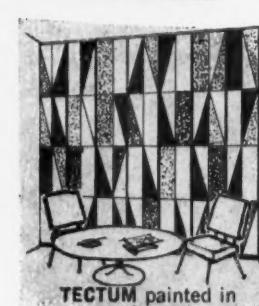
TECTUM for
subflooring



TECTUM for decorative
ceilings, multi-thickness
combinations



TECTUM for sculptured
wall effects



TECTUM painted in
geometric designs

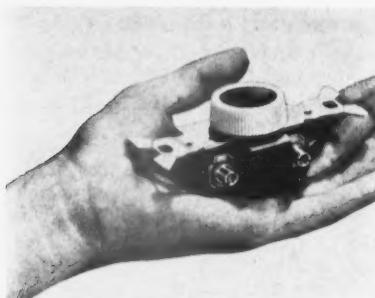
Architectural & Engineering News

PRODUCTS, EQUIPMENT, MATERIALS

SPECS/FEATURES: product helps provide color-coding of conduit runs, as in distinguishing runs carrying electrical lines from those carrying telephone or intercom lines. Pipes are available in this color range from $\frac{1}{2}$ " to 6" diameters and are supplied in standard 10' lengths. Special colors available on order. No finishing or painting of pipe is required after receipt.

AIA FILE NO. 31-C-62
MFR: NATIONAL ELECTRIC DIV., H. K. PORTER CO., INC.

Circle 225 for further information



LIGHT DIMMER FITS STANDARD WALLBOX

MFR'S DESCRIPTION: full-range electronic incandescent light dimmer that fits into a standard single wall box.

USES: residential and commercial.
SPECS/FEATURES: unit provides gradual control of lighting intensity from full dark to full bright on incandescent circuits up to 600 watts. Unit is same size as standard switch, installs with two wires, single wallbox and standard wall switch plate. Unit is a solid-state, semi-conductor device and not a rheostat or a variable transformer. Retails at \$24.95.

AIA FILE NO. 31-F-25
MFR: ELECTRO-SOLID CONTROLS, INC.
Circle 226 for further information

DOORS/WINDOWS

SLIDING GLASS DOOR IN LUXURY MODEL

MFR'S DESCRIPTION: new design sliding glass door with luxury features throughout.

USES: luxury residences and light commercial buildings.

SPECS/FEATURES: model designed for strength and rigidity, partially gained by use of tubular extrusions for all intersecting frame members. Door track is stainless steel and two adjustable ball-bearing sheaves in each door help insure alignment. Full width threshold features a protective step. Weathersealing with both vinyl

← Circle 117 for further information about YOUNGSTOWN, pp. 34-35

and high-pile mohair is used throughout, plus continuous contact sliding vinyl at threshold. Door designed for either $\frac{3}{16}$ " or $\frac{1}{4}$ " sheet glass, or may be used with $\frac{5}{8}$ " dual glazing. Door may be either field-glazed or shop glazed. Hardware includes optional keyed lock and *Lucite* grip. Other optional equipment includes special heavy duty interlockers for higher deflection ratios.

AIA FILE NO. 16-N
MFR: ADOR CORP.

Circle 227 for further information

POST CONSTRUCTION DRYWALL DOOR FRAME

MFR'S DESCRIPTION: steel door frame installed after drywall is completed.
USES: commercial, residential and industrial.

SPECS/FEATURES: frame is specially designed for use with $1\frac{3}{8}$ " doors and can be used with plaster or drywall construction. Frames are $5\frac{1}{2}$ " deep and are available in standard widths ranging from $1'-6\frac{1}{4}"$ to $3'-1\frac{1}{4}"$, and heights from $6'-8\frac{7}{8}"$ to $8'-7\frac{1}{8}"$. Anchors are welded to frame jamb and header to help simplify installation.

AIA FILE NO. 16-A
MFR: TRUSCON DIV., REPUBLIC STEEL CORP.

Circle 228 for further information

BI-FOLD DOOR LINE IN NEW DESIGN

MFR'S DESCRIPTION: a new door style, with louvers in upper section of door and embossed panel in the lower section.

USES: residential interiors.

SPECS/FEATURES: door is offered in desert white color finish. Company claims 12 important mechanical improvements including jamb mounting brackets, adjustable bottom pivots, spring-loaded top pivots and adjustable neoprene cushions, with thicker door panels.

AIA FILE NO. 16-M
MFR: LEIGH BUILDING PRODUCTS DIV., AIR CONTROL PRODUCTS, INC.

Circle 229 for further information

VENETIAN BLIND STACKS AT SILL

MFR'S DESCRIPTION: venetian blind with regular features, stacks at bottom.

USES: privacy, shading.

SPECS/FEATURES: designed primarily for use in patient examination rooms in hospitals, new lowering venetian blind provides light with privacy. Also available in the full closure type for use in audio-visual work.

AIA FILE NO. 35-P-3
MFR: LEVOLOR LORENTZEN, INC.
Circle 230 for further information



SPECIFY THE DRAINLINE THAT DEFIES CORROSION PYREX® DRAINLINE

If your client pours corrosives down the drain, give him the dependability and durability he needs by specifying PYREX "double-tough" drainline.

PYREX drainline wasn't born yesterday. It's been handling the toughest, meanest wastes for over two decades. Many of the earliest installations are still in service today. Here's why: It's resistant to more acids and acidic compounds than any other material.

PYREX drainline also drastically reduces maintenance. It neither corrodes nor leaks, so maintenance costs shrivel to almost nothing. Dangerous

hidden problems that corrosive chemicals produce in metallic piping are eliminated. Plug-ups can be seen before complications set in.

PYREX drainline is easy to install. Simple stab-fit, one-bolt coupling . . . light weight . . . fewer hangers, fewer joints . . . no cleanouts or expansion joints — all spell significant savings in installation cost.

There's a lot more, including specs, in Bulletin PE-30. Write for a copy to Plant Equipment Department, 4408 Crystal Street, Corning, N. Y.

see our catalog in Sweet's **S**

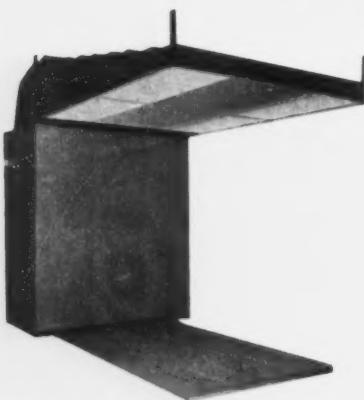


CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

Circle 119 for further information

PRODUCTS, EQUIPMENT, MATERIALS



COMMERCIAL AIR DOOR FOR HEAVY TRAFFIC

MFR'S DESCRIPTION: curtain of air only barrier between interior and exterior of building during business hours.

USES: commercial entrances.

SPECS/FEATURES: entrances are said to reduce heating or cooling air losses. A packaged product designed for commercial entrances 4', 6' and 8' wide. Line also features a modular product, built up in standard components, for entrances up to 16' in width; and a custom-engineered product for greater widths.

AIA FILE NO. 16-F

MFR: AIR DOOR, INC.

Circle 231 for further information

NEW PRIME DOOR LINE OF WOOD & ALUMINUM

MFR'S DESCRIPTION: prime door can be planed and installed like standard wood doors.

USES: residential and commercial.

SPECS/FEATURES: core of door is wood, with aluminum outer skin which is available in both plain and anodized finishes. Door is installed same as standard wood door. Woodworking tools are all that is needed to fit and hang the doors. They may be sawed, planed, or bored.

AIA FILE NO. 16-B

MFR: HESS MANUFACTURING CO.

Circle 232 for further information

HARDWARE

TILT-IN WINDOW HARDWARE DESIGNED FOR SAFETY

MFR'S DESCRIPTION: window tilts inward for cleaning and repairing.

USES: residential, commercial, institutional and industrial.

SPECS/FEATURES: tilting window hardware converts a double hung sash into a window that tilts inwards. With this equipment, both sashes can be tilted individually into room without moving screens, storm sash,

shades or blinds, or disturbing an air conditioner.

AIA FILE NO. 29-A

MFR: SAFETY WINDOW HARDWARE CORP.

Circle 233 for further information

DECORATIVE BACKPLATES FOR LUXURY DOORS

MFR'S DESCRIPTION: luxury backplate for residences or executive offices.

USES: door hardware accessories.

SPECS/FEATURES: designed for use with Schlage A or D locks, the escutcheon, 12" in diameter, is available with inlays of mother-of-pearl, avalone shell, malachite, lapis lazuli or other semi-precious stones. Backplate is hand-crafted solid brass.

AIA FILE NO. 27-B

MFR: PHYLRICH CORP.

Circle 234 for further information

CONCEALED DOOR HINGE WITH ROTARY DESIGN

MFR'S DESCRIPTION: door hinge with rotary design for greater strength.

USES: doors.

SPECS/FEATURES: rotary concealed hinge opens to full 180° and is concealed when door is closed. Hinge action brings door and jamb portions together in perfect alignment, according to manufacturer, yet separates them as door opens so damage to heel edge of door is avoided.

AIA FILE NO. 29-B

MFR: M. SCHNUR CO.

Circle 235 for further information



NEW CLIPS DO AWAY WITH NEED FOR BRIDGING

MFR'S DESCRIPTION: newly designed connection clips.

USES: in conjunction with open web steel joists and precast concrete joists.

SPECS/FEATURES: with clip connections of this design, concrete comes into direct contact with tops and sides of flanges of supporting members, resulting in interaction between slab and supporting members which provides much more rigid construc-

tion, manufacturer says. This rigidity makes it possible to eliminate costly bridging when not required by local codes. Manufacturer says new designs are suitable for all types of thin-slab floor construction in conjunction with open web steel joists and pre-cast concrete joists.

AIA FILE NO. 17-A

MFR: K SYSTEMS, INC.

Circle 236 for further information

MATCHED DOOR HARDWARE FOR ALL-BUILDING USE

MFR'S DESCRIPTION: line of hardware designed for use throughout home or building.

USES: residential and commercial.

SPECS/FEATURES: hardware grouping completely matched in finish and design. Locksets, cabinet hardware, window hardware and butts and hinges are all available in this model line. Model line of hardware designated *Colonial Classic* is finished in antique brass.

AIA FILE NO. 27-A/B

MFR: NATIONAL LOCK CO.

Circle 237 for further information

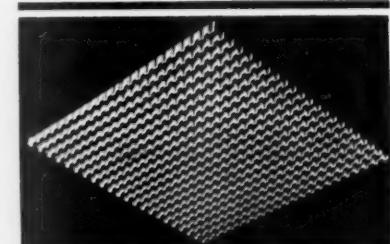
both single piece pine and plug are flush with top and bottom of barrel.

AIA FILE NO. 27-B

MFR: MCKINNEY MANUFACTURING CO.

Circle 239 for further information

METAL USES



TEXTURED ALUMINUM AS LOUVERED CEILING

MFR'S DESCRIPTION: new design in a line of textured aluminum louvered ceilings.

USES: commercial.

SPECS/FEATURES: product designed for use in various suspended ceiling systems, and available in modular dimensions. Standard panel sizes are 2'x2', 2'x4', 3'x3' and 4'x4', with larger sizes available. They can be supplied in baked white enamel, natural, or gold anodized finishes.

AIA FILE NO. 31-F-231

MFR: NEO-RAY PRODUCTS, INC.

Circle 240 for further information

ANODIZED ALUMINUM SHOWER-CURTAIN ROD

MFR'S DESCRIPTION: aluminum shower rod latest addition to manufacturer's line of bathroom accessories.

USES: residential.

SPECS/FEATURES: shower rod featuring gold anodized aluminum track with end flanges and carriers completely made of nylon and colored black. Aluminum shower rod can be ordered individually or in packages.

AIA FILE NO. 27-C

MFR: GRANT PULLEY & HARDWARE CORP.

Circle 241 for further information

OPEN WEB SECTIONS OF EXPANDED STEEL

MFR'S DESCRIPTION: wide range of expanded open web steel sections.

USES: standard steel construction.

SPECS/FEATURES: new sections include beams, girders, columns, channels, zees and joists. Four different series of beams or girders are available, with square, hexagonal, octagonal or trapezoid openings in the web. Openings in web also provide a free-way for utilities. Manufacturer says several of new series of beams and girders provide added stiffness for long span construction with some members designed for use in curved construction. Open web columns with hexagonal openings and increased depth help provide greater stiffness,

and the open web channels are available in a variety of depths for longer spans. Longer spans are also claimed for the new open web zee shape.

AIA FILE NO. 13-H

MFR: SHLAGRO STEEL PRODUCTS CORP.

Circle 242 for further information



CONTEMPORARY DESIGN ALUMINUM SHELL HOME

MFR'S DESCRIPTION: aluminum shell home for volume production.

USES: low-cost housing and resort residence development projects.

SPECS/FEATURES: shell house features outer walls of aluminum-faced insulated panels 1" thick and consisting of a bonded sandwich of aluminum, plastic foam insulation and Masonite. Roof sections backed by a bonded plastic foam and primary insulation are installed with suspended aluminum ceiling system. Company says complete shell delivered to site, is ready for construction by a crew of three carpenters in two days. Colors are chosen by customer and shipped from factory. Dimensions are 28'-4" in length, 24'-4" in width; inside ceiling height is 7'-6". House floor space is about 700 sq. ft. Interior design calls for two bedrooms, living room, kitchen and bath; or variations desired by owner. Partitioning, plumbing, electrical work, landscaping, septic tank, well, bathroom and kitchen fixtures can be completed by owner or company. Basic erected unit priced at approximately \$3,000.

AIA FILE NO. 17-A

MFR: MAJOR REALTY CORP.

Circle 243 for further information



ELEVATED FLOORING FOR UNDER-FLOOR SPACE

MFR'S DESCRIPTION: new type of elevated flooring.

USES: special installation calling for under-floor space.

SPECS/FEATURES: flooring particularly designed for use in electronic computer installations, or where extensive cabling and wiring systems

CAPACITY'S UP!

SOLID COPPER TANK
REINFORCED WITH STEEL

***CAPACITY'S UP!** The Duo-Temp Mixing Valve (standard equipment) mixes the stored 180° water with cold to achieve any desired degree of general purpose water. It delivers both 180° sanitizing water, and a lower, general purpose temperature at the same time. This mixing boosts the effective tank capacity 30% or more, depending on the general purpose temperature selected.

EFFICIENCY'S INSURED! Future demands for more hot water are handled by adding another Sanimaster. The Ruud Equa-Flow Manifold connects 2, 3, or 4 Sanimasters; equalizes the water flow through each; yet keeps them working separately. Should one unit require servicing, the other units on the Manifold System continue to operate.

It takes a special kind of water heater to handle the high-temperature, high-volume hot water needs of today's commercial demands.

The new, improved line of Ruud Copper Sanimaster Commercial Gas Water Heaters are designed and built specifically for this purpose.

Each of the nine models available is a self-contained, automatic storage water heater. Their compact design saves space and provides the contractor with greater installation flexibility. In addition, expandability of the system is simple and economical with the Ruud Equa-Flow Manifold system.

Sanimasters are warranted for five years and carry industry seals of the N.S.F., A.G.A., and A.S.M.E. The new Ruud Engineer's Manual now provides full facts about every model

and the Certified Sizing Guides, available for 23 use-classifications permit easy, accurate selection.

For a complimentary copy of the new Ruud Sizing Guides, send request on company letterhead, and a Ruud Commercial Water Heater specialist will personally deliver a set to you.

Write today to:

RUUD MANUFACTURING COMPANY
7600 S. Kedzie Ave., Chicago 52, Ill.

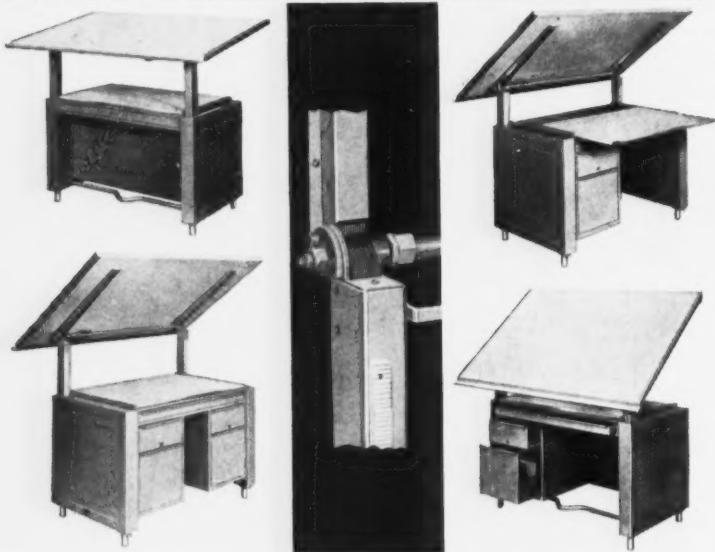
Subsidiary of Rheem Manufacturing Company

**Manufacturers of commercial and residential
water heaters of the highest quality.**



Circle 120 for further information

DRAFTING TRENDS



Four views of the versatile new Torsion Auto-Shift Table and the heart of its exclusive new design principle.

Efficient, Convenient, Contemporary ... New Torsion Auto-Shift Table

Advanced design—A searching look will tell anyone who uses a drafting table that this is the equipment he'd create, given the time.

As any designer knows, simplicity is often difficult to achieve, and the appearance of simplicity even more difficult. Both are found in exclusive features of the new Hamilton Torsion Auto-Shift.

Tailored to the user—Unlike other designs, this is engineered, functional equipment for drafting, not just a drawing board slung on four legs or hung on a modified office desk. *It is designed without compromise to promote greatest efficiency by adapting to the work habits and convenience of the individual using it.* Its special characteristics will speed drafting substantially over conventional equipment in a one-man or one hundred-man department.

Unique features—The Hamilton Torsion Auto-Shift will counter-balance, regardless of table angle or weight of board accessories. It is attached and pivots at only two points—*atop twin elevating columns, easily raised or lowered by foot pressure through a 12" vertical*

range. Operating and adjusting mechanisms are readily accessible—without the need for bulging sheet metal covers or protruding hardware.

Stratacore® board—Further features include the new Stratacore drawing board . . . a light weight, linoleum-surfaced top of remarkable strength and stability. Slide-type reference surface can be used from front or rear. All drawers are reversible for use from one side or the other. Tool and catalog drawers may be installed at left or right, or on both ends.

Clearly, the new Hamilton Torsion Auto-Shift now offers even greater dividends for long-term investment in space economies, increased drafting output and improved user comfort.

Ask your POST dealer for full details, layout aids and planning assistance to put this prestige drafting furniture in your *near future*. Or, write Frederick Post Company, 3654 No. Avondale Ave., Chicago 18, Ill.



SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

Circle 121 for further information

PRODUCTS, EQUIPMENT, MATERIALS

require under-floor space and immediate accessibility. Modular 24"x24" panels, made of plastic molded around cross-laminated plywood are designed for higher wear-resistance. Floor designed to support a live load of 250 psf, and a point load of 1000 lbs.

AIA FILE NO. 17-A

MFR: STRATO-FLOOR, INC.

Circle 244 for further information



CUSTOM/PRE-PACKAGED METAL BUILDINGS

MFR'S DESCRIPTION: new industrial steel building assembled from off-the-shelf components.

USES: metal industrial buildings.

SPECS/FEATURES: building features pre-engineered sections that can be fitted together to form a wide variety of building types and sizes. It is delivered as a complete package, with siding, roofing, doors, windows and hardware included. Building features open web trusses, purlins, and girts. Available building heights are 12', 14' and 16'. Widths run from 30' to 80', in ten-foot increments. Various accessories are also available.

AIA FILE NO. 17-A

MFR: REPUBLIC STEEL CORP.

Circle 245 for further information

MISCELLANY

RUBBER RUNNER FLOOR MATTING

MFR'S DESCRIPTION: new two-purpose rubber runner floor matting.

USES: commercial and industrial.

SPECS/FEATURES: one side of matting has wide beveled non-trip corrugations for dirt removal and reverse side has fine corrugations for walking and standing comfort. Angled corrugations of top surface permit dirt to fall between them and facilitate cleaning. Fine corrugations of reverse side permit aeration and retard sweating condition in hot humid weather. Runner available in green, red, gray, beige and black in 36" and 48" widths, $\frac{1}{4}$ " thick, in lengths up to 60'.

AIA FILE NO. 19-J

MFR: AMERICAN MAT CORP.

Circle 246 for further information

FREE-STANDING FIREPLACE IN A COMPLETE PACKAGE

MFR'S DESCRIPTION: complete, free-standing fireplace unit, from firebrick to roof flashing.

USES: residential.

SPECS/FEATURES: packaged fireplace is a freestanding unit, needs no walls to rest against, no wall studs to connect to, and designed for installation in any room. Unit is styled with flared hood encircled by solid brass trim, and has a solid brass crest. Unit provided in a neutral prime coat, and can be painted with any metal paint. Fireplace takes any fireplace fuel, including firelogs up to 27" in length. Chimney housing pre-assembled for immediate use. Complete installation takes about four hours.

AIA FILE NO. 5-H

MFR: STRATTON & TERSTEGGE CO., INC.

Circle 247 for further information

RESIDENTIAL WATER AND DISPLAY FOUNTAIN

MFR'S DESCRIPTION: fountain produces tiers of bursting droplets to gain a shower effect.

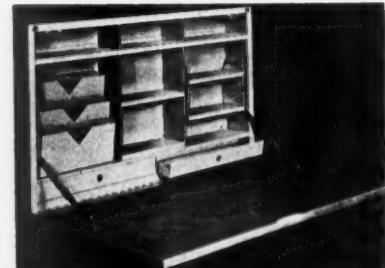
USES: residential landscapes

SPECS/FEATURES: departing from standard fountain head designs that discharge water in a solid or continuous stream, manufacturer developed a shower type spray effect for fountains. Design is available in three series of nozzles, all made of brass and other non-rusting, non-corrosive materials. Within this series range, fountain water can reach heights of 4'-6" to 15', and a diameter as large as 20'. Fountains utilize same water continuously by using a catch bowl or basin and recirculating pump. Prices range from \$18.00 to \$125.00.

AIA FILE NO. 38-G

MFR: RAIN JET CORP.

Circle 248 for further information



BUILT-IN DESK UNIT FOR WALL INSTALLATION

MFR'S DESCRIPTION: 4" deep compact desk unit.

USES: home or small office.

SPECS/FEATURES: designed to be installed in or attached to wall with

accessory wood frame. Entire unit measures 4"x30 1/4"x16 1/4" high. Metal insert unit includes stationary pockets, seven shelves, and two drawers. Product has a fruitwood-finished, hinged door designed for use as writing or drawing surface. When not in use, door folds into wall and is held by magnetic catches.

AIA FILE NO. 35-H-4

MFR: SWANSON MANUFACTURING CO.
Circle 249 for further information

**CUSTOM MURALS/DESIGNS
WITH VITREOUS ENAMEL**

MFR'S DESCRIPTION: custom designed murals and other metal-working.
USES: decorative interior and exterior designs.

SPECS/FEATURES: a wide range of products in vitreous enamel for serving architects. Work of specific design is accepted in addition to traditional and contemporary work. Manufacturer specializes in making standard architectural curtain wall panels decorative with a variety of techniques.

AIA FILE NO. 25-C/D

MFR: DORIS HALL ENAMELS
Circle 250 for further information



**MULTI-PURPOSE
FOLDING TABLE**

MFR'S DESCRIPTION: folding table designed for multiple uses.

USES: educational, institutional and commercial.

SPECS/FEATURES: table has surface of gray Formica and plastic backing sheet with edge molding of flush anodized aluminum. Dimensions are 24"x62"x29" high. A "modesty panel" is available in this model that measures 62"x10 1/2". Surface of panel has a teakwood appearance. Each leg is individually braced and locked when standing.

AIA FILE NO. 28-A-7

MFR: HOWE FOLDING FURNITURE, INC.
Circle 251 for further information

**NEW SOUND SYSTEM
IN FOUR INCHES**

MFR'S DESCRIPTION: sound system requiring only 4" wall depth.

USES: institutional and commercial.

SPECS/FEATURES: 30-watt all-transis-

Circle 122 for further information →

ALL A's IN SCHOOLS
FOR FLINTKOTE
INSULROCK®
ROOF DECKS

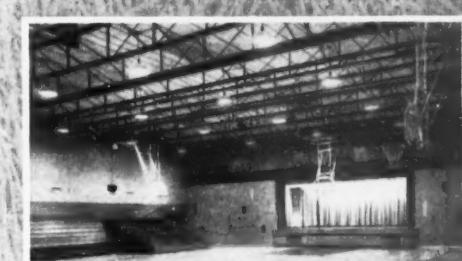
Almost half the INSULROCK made today goes to school . . . with honors.

And no wonder. INSULROCK wins its letter for outstanding performance on all counts: beauty, strength, acoustical and insulating efficiency, durability, economy. These single-unit wood fiber/portland cement panels provide handsome exposed ceilings . . . make possible 60-70% light reflectance from factory-applied INSUL-GLO 70* finish . . . stimulate excellent contemporary design within school budgets. And Insul-tones*, INSULROCK in five factory-applied pastel colors, are available in minimum order quantities.

The 145,000 board feet of INSULROCK used in this new Illinois school add to INSULROCK's position at the head of its class — *for beauty that stands up through the years.*

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Jefferson Junior High School, Mattoon, Illinois
Architects: Gatewood & Fields, A.I.A.

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It's Mirropane®, the "see-thru" mirror. Recommended for use in schools, banks, hospitals, stores, homes . . . anywhere you want to see or observe without being seen. When *Mirropane* is made of clear plate glass, a light-intensity differential of about 7 to 1 is required. For best performance,

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MIRROPANE
the "see-thru" mirror
LIBBEY·OWENS·FORD

Circle 123 for further information



PRODUCTS, EQUIPMENT, MATERIALS

tor sound unit designed for flush mounting in either frame or masonry walls. Entire amplifier is mounted on a hinge door which swings out for servicing. Controls are accessible from front through a hinged panel which can be locked. All transistors are also accessible through a removable front plate.

AIA FILE NO. 31-i-7

MFR: RAULAND-BORG CORP.
Circle 252 for further information

REGULATION-SIZE TENNIS TABLE

MFR'S DESCRIPTION: folding tennis table with wheels for easy storing.
USES: recreation.

SPECS/FEATURES: full-size regulation tennis table that folds and rolls to any area of a building. Folds to 7½" for moving or storage. Special brackets fold against table so that net need not be removed when table is folded. Item is designed so that two center legs will support most of weight load and prevent possible movement of table in case wheellocks are disengaged.

AIA FILE NO. 35-F-5

MFR: HAMILTON MANUFACTURING CO.
Circle 253 for further information

CEDAR SIDEWALL IN NEW DESIGN LINE

MFR'S DESCRIPTION: new line of cedar sidewall with lightly textured edge grain appearance.

USES: residential and commercial.

SPECS/FEATURES: new line of cedar sidewalls are recut, rebuttal and rejoined. Manufacturer claims every shingle is perfectly square and of a uniform thickness aiding application and helping insure snug fit. In addition, sidewalls are reversible, with a lightly rippled surface on one side and the opposite face available in a choice of machine-grooved or sawn shingle surface. Item also available factory-primed in gray-white. Cedar sidewalls are shipped carton packed.

AIA FILE NO. 19-D-2

MFR: NORTH SHORE SHINGLE CO.
Circle 254 for further information

COSTS REDUCED ON FIRE-RETARDANT FOAM

MFR'S DESCRIPTION: savings on production of rigid foam systems cut costs.

USES: sandwich panels/insulation applications.

SPECS/FEATURES: elimination of some steps in production of this rigid foam without affecting physical properties. Fire-resistance is now inherent in foam and not applied as an additive with possible resulting weakening or added cost. Dimen-

sional stability, low water absorption and moisture permeability are features of this foam, according to manufacturer.

AIA FILE NO. 39-B

MFR: DUREZ PLASTICS DIV., HOOKER CHEMICAL CORP.

Circle 255 for further information



OPEN HEARTH FIREPLACE-STOVE

MFR'S DESCRIPTION: new line of open hearth fireplace-stoves.

USES: residential.

SPECS/FEATURES: unit consists of a heavy steel base with ash receptacle and clean-out, self-cleaning fire grates, inner circulating form, outer hood, fire screens, and insulated flue section. When fire is lighted, cold air is drawn off floor at back and circulated between inner form and hood. This prevents hood from becoming excessively hot. Units come in two sizes, each in three different models. Standard colors include black, red, chalk white and light brown. Other colors are available upon special order. Finish may be enamel or porcelain. Fireplace designed to meet standard code requirements where free-standing stoves are permitted.

AIA FILE NO. 14-E

MFR: NORTHWEST TUBE & METAL FABRICATORS
Circle 256 for further information

ONE-COMPONENT/LIQUID CURTAINWALL SEALANT

MFR'S DESCRIPTION: one-part 100% liquid polymer sealant.

USES: curtainwall construction.

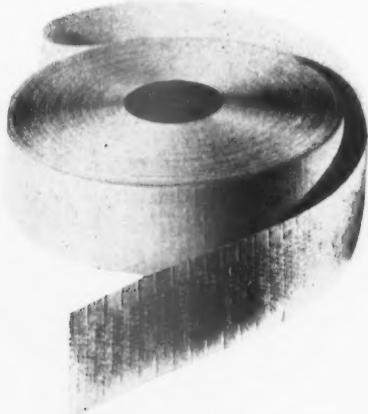
SPECS/FEATURES: sealant recommended for channel glazing, bedding and sealing joints of most panels and lights. Also for caulking and pointing. Sealant adheres to porous and non-porous surfaces—metal, masonry, glass, wood, etc., without staining. Normally no priming of surface

is necessary; it retains slight surface tack; can be painted; reaches its ultimate degree of set and firmness in one or two months without noticeable hardening later; can be tooled after gunning; available in a wide range of colors.

AIA FILE NO. 17-J

MFR: TREMCO MANUFACTURING CO.

Circle 257 for further information



JOINT SYSTEM TAPE FOR DRYWALL CONSTRUCTION

MFR'S DESCRIPTION: embossed joint system tape.

USES: drywall construction.

SPECS/FEATURES: tape remains stable under varying humidity conditions, reducing uneven expansion and edge wrinkling. Tape also provides easier applications, rapid drying with no air retention and superior adhesion to wallboard surfaces. Tape is center embossed to permit air flow through the roll of tape, and edge embossed to make up stretch in the skiving operation.

AIA FILE NO. 17-J

MFR: BESTWALL CERTAIN-TEED SALES CORP.

Circle 258 for further information



UNITS TO CORRECT FAULTY ACOUSTICS

MFR'S DESCRIPTION: material designed for use in correcting acoustics after construction.

USES: acoustical.

SPECS/FEATURES: cellular glass units, 13½" x 13½" x 2½", are perforated for

For New York's Summit Hotel...

DARLINGTON STASO GLAZED BRICK in a new—Exclusive color*

A monumental addition to New York's hotel facilities is the new Summit . . . Manhattan's first new hotel in thirty years. For its exterior, the architects selected Darlington STASO Glazed Brick in new Summit Blue to achieve long-lasting beauty, and unique and distinctive design.

For your next building, utilize the superior advantages of Darlington STASO Glazed Brick. It combines the advantages of lower initial and lower maintenance costs of brick curtain wall construction, with the permanent beauty of color ceramics. Now available in a host of satin finish pastel shades, plus new KolorspeK† for creative color expression.



TM Registered
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The Summit, Lexington Avenue and 51st Street, New York City. Owners & Operators: Loew's Hotels, Inc.
Architect: Morris Lapidus, Harle & Liebman, New York City, Contractors: Diesel Construction Company, New York City.

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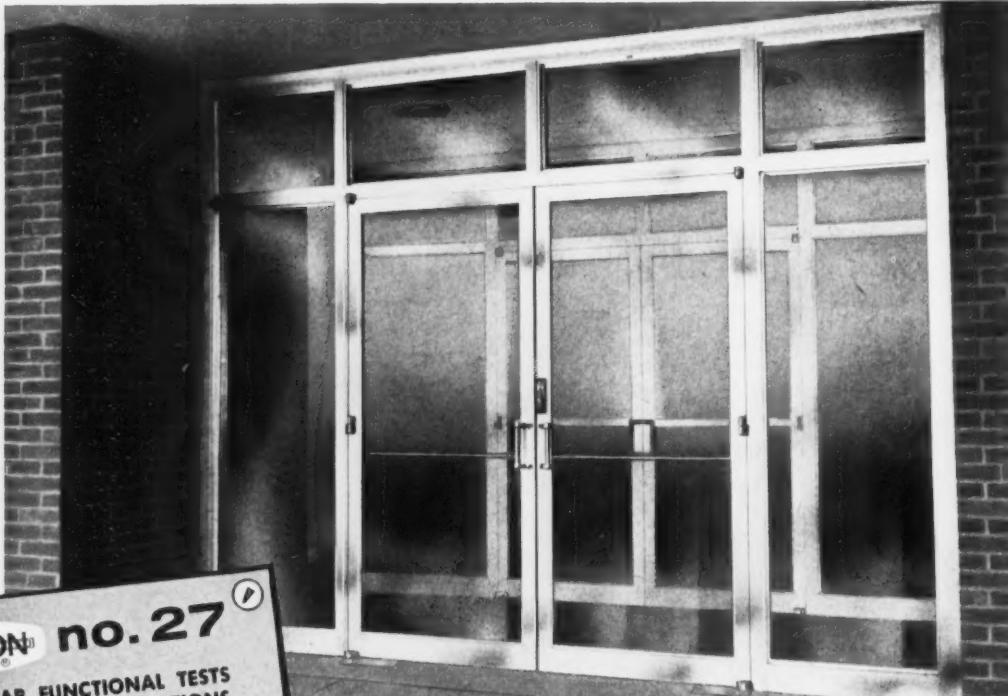
332 South Michigan Avenue, Chicago 4, Illinois

See Our Catalog in SWEET'S ARCHITECTURAL FILE.

Circle 124 for further information

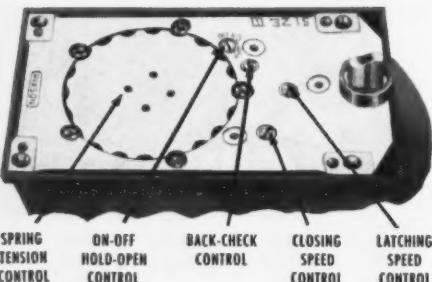
No. 27 CLOSER safely controls doors subject to strong Mt. Olympus winds

CLOSER'S PERFORMANCE PROVEN IN TWO-YEAR TEST AT SYRACUSE UNIVERSITY



King and King, Architects

A COMPLETELY NEW DOOR CLOSER DESIGN
no. 27 offset hung no. 28 center hung



All the features of the No. 27 closer have been put to an unusually severe test on these entrance doors . . . atop Mt. Olympus, highest point on the college campus overlooking Syracuse. Here, heavy in-and-out student traffic and strong gusty winds subject the doors to considerable abuse.

When the No. 27 was installed, the back-check was adjusted to match the force of these winds as well as the youthful exuberance of students. The two independent closing and latching speed adjustments were set to safely control the door's closing action. When desired, the door is held open by an automatic hold-open, releasable by a firm pull.

Since the closer's original installation, the No. 27 has functioned smoothly with no further attention.

Complete literature and details on the No. 27 offset hung and No. 28 center hung closers will be mailed on request.

THE OSCAR C. RIXSON COMPANY

Circle 125 for further information

9100 west belmont ave.
franklin park, illinois

CANADIAN PLANT:
43 Racine Road (Rexdale P.O.)
Toronto, Ontario

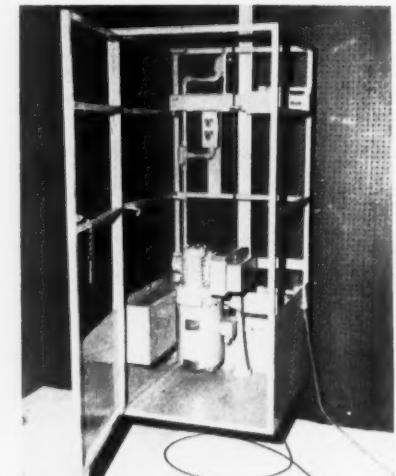
PRODUCTS, EQUIPMENT, MATERIALS

additional sound absorption. Each unit is set out from wall so back of units acts as an absorber and air space between wall and unit serves as resonance chamber. Product is unaffected by moisture and will not shrink or warp. It is incombustible, an important consideration in institutional buildings.

AIA FILE NO. 39-B

MFR: GEOCOUSTIC DIV., PITTSBURGH CORNING CORP.

Circle 259 for further information



VERTICAL SERVICE CAR FOR HIGH BUILDINGS

MFR'S DESCRIPTION: vertical service car that provides a convenient method of servicing structures of any height.

USES: commercial and industrial.

SPECS/FEATURES: car is a free line, constant speed hoist operating on a permanent guide rail. Service car can be used either as a portable or permanent installation. Operates on 110, 220 or 440 volts, single- or three-phase, and carries a live load of 500 lbs.

AIA FILE NO. 33-Y

MFR: MEYER MACHINE, INC.

Circle 260 for further information

CONSTRUCTION TRANSIT WITH OPTICAL PLUMMET

MFR'S DESCRIPTION: transit with added feature of an optical plummet.

USES: surveying

SPECS/FEATURES: transit with optical plummet can be set up in about $\frac{1}{4}$ less time, according to manufacturer. Accuracy is improved by sighting precisely on point beneath transit.

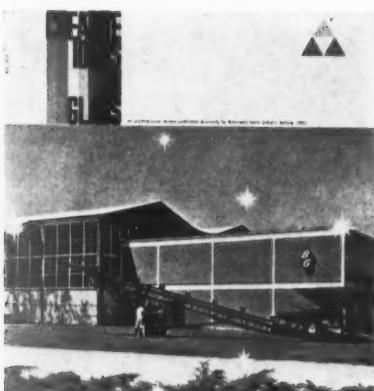
AIA FILE NO. 35-N-8

MFR: W. & L. E. GURLEY CO.

Circle 261 for further information

LITERATURE

Literature cited in this department is available from various manufacturers and associations free of charge, except where indicated. To obtain copies, circle the keyed numbers on the reader service cards facing pages 1 and 66.



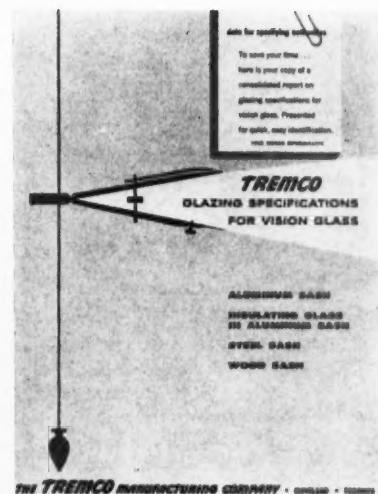
SUN CONTROL WITH GLASS

The control of solar energy to create a man-made indoor climate is featured in a new edition of *Creative Ideas in Glass*, an architectural quarterly, offered by a major glass manufacturer. Magazine gives recommendations that will aid the architect in selecting proper thickness and pattern to obtain a specific result. (8 pp.)

AIA FILE NO. 26-A

MFR: AMERICAN-SAINT GOBAIN CORP.

Circle 300



GLAZING SPECS

Brochure is designed to provide basis for evaluation of all significant factors bearing on requirements of glazing sealants to be used on any given job to help insure adequate security of performance at lower costs. Brochure reports principal causes of glazing failures, factors governing sealant selection and placement, minimum standards and basic glazing recommendations for aluminum, steel and wood sash. (12 pp.)

AIA FILE NOS. 7-D/26A-51/26-B

MFR: TREMCO MANUFACTURING CO.

Circle 301

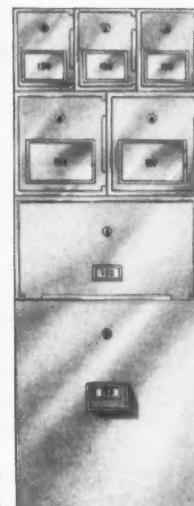
For all Commercial and Institutional Buildings... Colleges, Apartments, Motels, etc.

CORBIN LETTER BOXES

Key or Dial Operated with MODULAR VERSATILITY

All Corbin cast bronze letter boxes are made to widths resulting in an 11" modular. Small boxes measure 3½" in width, medium size, 5½", and large, 11". These dimensions are standards of the Post Office Department. Modular versatility assures the most efficient and effective use of space. The Corbin boxes illustrated can be convenience-keyed so one key opens mail box and interior door.

Write department D3 for Catalog WP28 describing key or dial operated boxes.



CORBIN WOOD PRODUCTS DIVISION
THE AMERICAN HARDWARE CORPORATION
NEW BRITAIN, CONNECTICUT

Circle 126 for further information

new floors OVERNIGHT!

ready for
Heavy
Traffic
with

STA-CRETE epoxy resins



Maintenance men specify STA-CRETE to solve hundreds of maintenance problems. Practically indestructible. **STRONGER THAN CONCRETE.** STA-CRETE epoxies are the solutions for repairing, resurfacing, patching, bonding, strengthening, water-proofing, and just plain wear and tear problems. Economical and easy to handle. Use only what you need; your supply will never deteriorate. Surface ready for heavy traffic overnight.

See your dealer or write

STA-CRETE, INC.

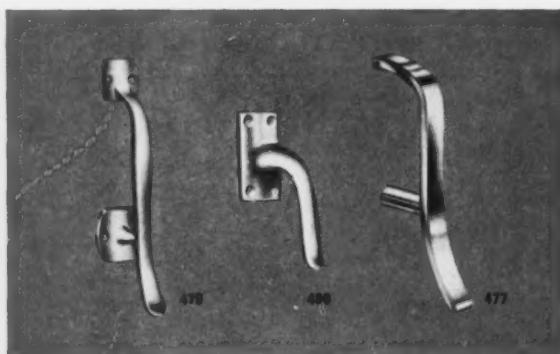
115 New Montgomery St.
San Francisco 5, Calif.

for
Industry
Agriculture
Warehouses
Office Buildings
Institutions
Refineries
Plants
Highways

Circle 127 for further information

FROM RUSSWIN

smart styling . . .
superb quality . . .
wide selection in arm pulls
for hospital doors



All popular types and finishes including stainless steel. Beautiful workmanship. Quality construction. Attractive designs. Part of a complete line of hardware for hospitals . . . locksets, closers, holders, stays, pivots. For literature, write Russell & Ervin Division, The American Hardware Corporation, New Britain, Connecticut.

Circle 128 for further information



BEAUTIFUL MARLITE PANELING for soilproof walls, easily installed

For any building or remodeling project, Marlite Paneling offers almost unlimited decorating possibilities; goes up fast over old or new walls. The baked plastic finish shrugs off grease, stains, mars—even heat! And unlike many “finished” wall panels that dull with age and damage through use, Marlite’s hard, dent-resistant surface stays like new for years with an occasional damp cloth wiping. You can select from authentic Trendwood® reproductions, beautiful plain colors, distinctive marble and decorator patterns. See your building materials dealer, consult Sweet’s File, or write Marlite Division of Masonite Corporation, Dept. 866, Dover, Ohio.

FREE!
Send for new
full-color Architect's
Catalog.



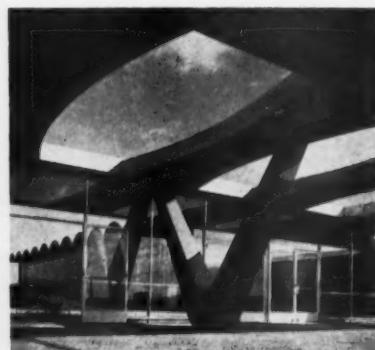
Marlite®
plastic-finished paneling

MARLITE IS ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

Circle 129 for further information

46

LITERATURE



GLASS FOR CONSTRUCTION

A major producer of structural and other types of glass has recently published a comprehensive booklet on glass and its architectural applications. Brochure is generously illustrated with photographs and details. (31 pp.)

AIA FILE NO. 26-A
MFR: LIBBEY-OWENS-FORD GLASS CO.
Circle 302

GLAZING

GLAZED MASONRY UNITS

Over 100 photographs and cross-sectional illustrations display a line of glazed structural masonry units. 35 standard shapes and 46 standard and special colors are shown in full-color reproductions. Coursing details, standards, specifications and installations are listed. (15 pp.)

AIA FILE NO. 10-B
MFR: SPECTRA-GLAZE DIV., THE BURNS AND RUSSELL CO.
Circle 303

GLAZED TILE LINE

Brochure in full-color displays a line of prefabricated structural masonry units. Descriptions of modular units as well as glazed lintels, sills and other custom precast units are given. Specifications, manufacture and application standards are also defined. (8 pp.)

AIA FILE NO. 10-B
MFR: GLAZON CORP.
Circle 304

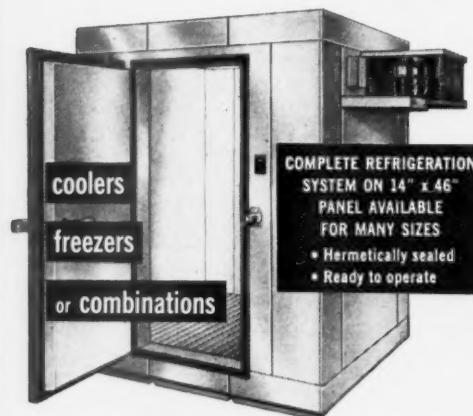
LAMINATED GLASS

Laminated architectural glass designed to reduce noise passage and expected to find use as partitions, dividers and window walls is covered in a recently published handbook. Cross-sections and illustrations demonstrate various uses and installation methods. (6 pp.)

AIA FILE NO. 26-A-5
MFR: MONSANTO CHEMICAL CO.
Circle 305

Bally walk-ins

Aluminum or steel sectional construction



Sanitary! Strong! Efficient! You can assemble any size cooler, freezer or combination in any shape from standard sections. Add sections to increase size as your requirements grow. Easy to disassemble for relocation.

ARCHITECTS: see 8 pages of engineering data in Sect. 26/A of Sweet's Catalog.

Bally Case and Cooler, Inc., Bally, Pa.

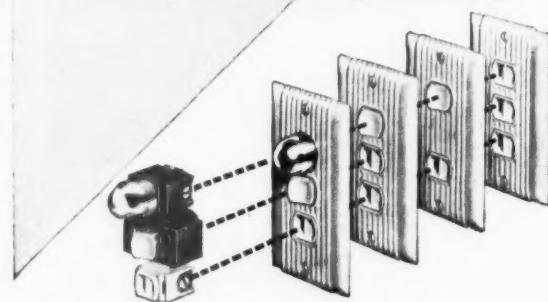
Get details—Write Dept. AN-8 for FREE book

Circle 130 for further information

COMPACT • FUNCTIONAL • VERSATILE

P&S ROCKER-GLO in DESPARD COMBINATIONS

(the original Interchangeable Line)



Save space, cut wiring time by installing famous Rocker-Glo in combination with any other P&S-Despard devices. Compact design lets you fit any combination of up to three switches, outlets, pilots or night lights in space ordinarily required for one!

P&S PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK

60 E. 42nd St., New York 17, N.Y. 1440 N. Pulaski Rd., Chicago 51, Ill. In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario

Circle 131 for further information

Architectural & Engineering News

LITERATURE

WINDOW GLAZING

A guide for the use of an acrylic plastic as a window glazing material has been published. Although booklet is intended primarily for those concerned with re-glazing, it is also useful to architects planning new construction. (8 pp.)

AIA FILE NO. 26-A-8

MFR: ROHM & HAAS CO.

Circle 306

MASONRY/BRICK

COATING FOR MASONRY

Folder describes a new type of coating material for masonry facades. Illustrations show a polyurethane composition which can be spray applied simultaneously with a grit aggregate. Materials, equipment, and application techniques are touched upon in folder, together with suggested architectural specification for the material. (4 pp.)

AIA FILE NO. 3-L

MFR: B. B. CHEMICAL CO.

Circle 307

BRICK FLOOR INSTALLATIONS

Complete illustrated information on brick floor installation featuring preparation of corrosion-resistant and wear-resistant joints to reduce floor maintenance. Also covered are procedures and techniques for proper installation of new brick floors and repair of existing ones, using special, non-shrink grout. (4 pp.)

AIA FILE NO. 5-A

MFR: THE MASTER BUILDERS CO.

Circle 308

MASONRY MATERIALS

Clay products for complete masonry work in residential and other light construction fields are detailed in a new bulletin. Brochure describes and illustrates a variety of building facing brick in numerous shapes, colors, and textures; glazed and unglazed facing tiles; and other clay products for various building applications. (4 pp.)

AIA FILE NO. 10-A

MFR: NATCO CORPORATION

Circle 309

WATERTIGHT MASONRY

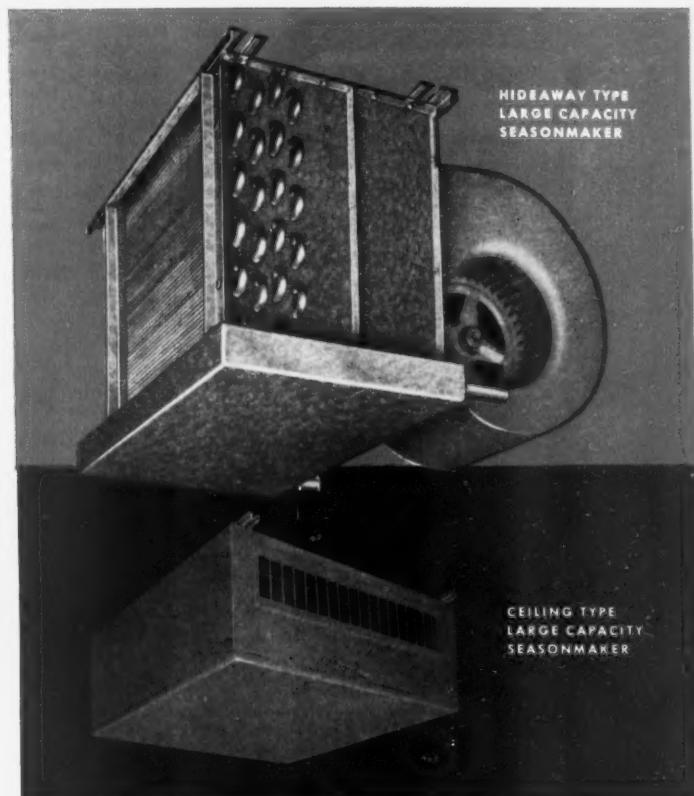
Principal pre-requisites to watertight masonry, fine workmanship and minimum of cracks between bricks and mortar, are detailed in a new publication which outlines considerations for tight masonry wall design. Mortar ingredients and proportioning, compatibility of brick and mortar, control of shrinkage and bleeding, separation cracks, effect of mechanical disturbance and import-

2 to 10 Tons Capacity



USE THESE NEW COMPACT LARGE CAPACITY

mQuay



seasonmakers

TO AIR CONDITION ALL MEDIUM SIZED AREAS

When you air condition medium to large sized areas requiring from 2 to 10 tons capacity, compare new McQuay compact large capacity

Seasonmakers with all others. Compare the features...compare the quality...compare the quietness...and you will agree that McQuay leads the field.

- * Hideaway models in 4 sizes—800 cfm to 2000 cfm.
- * Ceiling models in deluxe cabinets in 4 sizes of direct drive and 5 sizes of belt driven units—800 cfm to 3000 cfm.
- * New low height and compact design.
- * Permanent split capacitor, resilient mounted motors.
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- * Sloped, Styrofoam insulated drain pan.
- * Exceptionally quiet operation.
- * Rippled fin coil.
- * Money saving design for easy installation and minimum maintenance costs.

The McQuay representative in or near your city will gladly give you the complete Seasonmaker

story. Call him, or write direct to McQuay Inc., 1669 Broadway N.E., Minneapolis 13, Minn.

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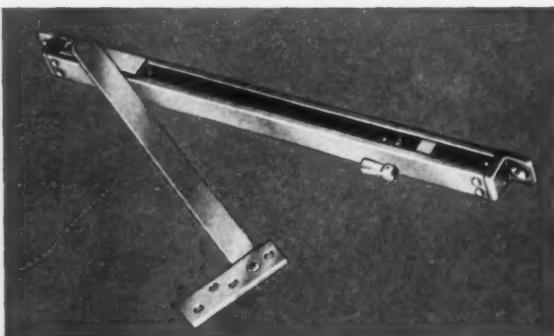
AIR CONDITIONING • HEATING • REFRIGERATION



Circle 132 for further information

FROM RUSSWIN

**the ultimate
in door holding
efficiency . . . simple,
modern styling**



Russwin 1750 Door Holders offer the ultimate in door holding efficiency. Wide contact holding latch is virtually wear-free. Heavy-duty extruded brass construction with forged brass mounting brackets. Top-mounted slide rides on rails . . . free of dust and dirt. Meets Federal Specification No. 1161. For details, write Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

Circle 133 for further information

NEW FROM REVOLUTE: the starlet

ONLY TABLE-TOP COPIER IN 42" WIDTH
WITH AUTOMATIC DEVELOPER FEED



Big-machine performance at small-machine cost: automatically separates originals up to 42" wide; automatically feeds exposed print paper into developer at speeds up to 45 fpm. Special introductory price as low as \$3,000, or \$87.50 per month on Lease-Purchase Plan. WRITE FOR BULLETIN A-2846. Charles Bruning Company, Inc., 1800 Central Road, Mt. Prospect, Illinois

**PARAGON
REVOLUTE**
A DIVISION OF
BRUNING

Circle 134 for further information

48

LITERATURE

ance of proper protection are also treated. (6 pp.)
AIA FILE NO. 3-F/L
MFR: THE MASTER BUILDERS CO.
Circle 310

BATHROOMS



MODERN BATHROOM FIXTURES

A new brochure is offered describing five popular models of water closets and sixteen lavatories, both floor-mounted and wall-hung. Brochure displays models and colors in various applications and suggests different models for various uses.

AIA FILE NO. 29-H-2/6
MFR: CASE MANUFACTURING CO.
Circle 311

LAMINATED SHOWER WALLS

An illustrated booklet describing laminated bath and shower walls is available. Booklet points out advantages of plastic laminate-styrene-foam sandwich surfaces. In addition, other properties of the coating material are discussed.

AIA FILE NO. 23-L
MFR: MICARTA DIV., WESTINGHOUSE ELECTRIC CORP.
Circle 312

SHOWER VALVE BOOKLET

Literature details company's one-control operation for residential shower-baths. Applications and typical specifications are given along with a detailed outline of advantages of a one-control fixture. Dimensions and models available are covered.

AIA FILE NO. 29-H-3
MFR: MOEN FAUCET
Circle 313

BATHROOM ACCESSORIES

Brochure illustrates a line of bathroom accessories including tumbler, toothbrush and papers holders, combination units, robe hooks and miscellaneous fixtures. Soap dishes, towel racks and shelving are also shown. A total of 140 photographs illustrates the products. (8 pp.)
AIA FILE NO. 29-J
MFR: THE FAIRFACTS CO.
Circle 314

For every installation needing strength and rigidity . . .

ELAFLOR*

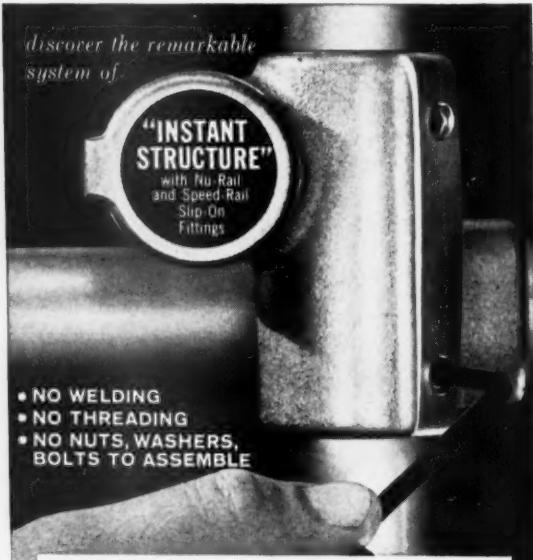
FREE-ACCESS FLOORING There are several types available . . . from the top they generally look the same. Underneath, it's a different story. Visit an installation of any brand, lift a panel, rock a pedestal. You'll see the difference between ELAFLOR and the others. But, you can save lots of time by referring to our literature . . . the facts and drawings are all there.

*Pat. App. For

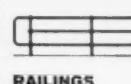
LISKEY L ALUMINUM, INC. Friendship International Airport, Box 506, Glen Burnie, Md.; Canadian Rep.—Cameron Windows (Aluminum) Ltd., 142 Kennedy Rd. S., Brampton, Ontario

Circle 135 for further information

Write for 34 page
"Construction Details" Folder



BUILD IN MINUTES . . .



RAILINGS



RACKS



WORK
PLATFORMS

WRITE Dept. 48-AE for facts on "INSTANT STRUCTURE" that could save you thousands of dollars in labor and materials costs!
THE HOLLANDER MFG. CO. • 3841 Spring Grove Ave. • Cincinnati, O.

Circle 136 for further information

Architectural & Engineering News

LITERATURE

PANELS/PARTITIONS

CEILING PANELS

A steel hexagonal ceiling panel for use in commercial interiors is the subject of a new bulletin. Technical properties, advantages, and specifications are given for use of this product in over-all ceiling illumination. (4 pp.)

AIA FILE NO. 31-C-231
MFR: FANNON PRODUCT DIV., HUPP CORP.

Circle 315

PARTITIONS/CUBICLES

New literature offers complete specifications and detailed design drawings of latest developments in partitions and cubicles for schools, hospitals, offices and commercial buildings. Of interest are the hardware, special finishes, and new plastic laminations descriptions which accompany construction information. (12 pp.)

AIA FILE NO. 20-B-11
MFR: METPAR STEEL PRODUCTS CORP.
Circle 316

PANELS/SIDING

Booklet shows various uses of manufacturer's line of siding, sheathing and interior panels. Construction details are illustrated by photographs and cross-section drawings. Typical specifications are offered.

AIA FILE NO. 19
MFR: THE UPSON CO.
Circle 317

INTERIOR PARTITION KIT

A kit showing various applications and styles of movable interior partitions and walls has been made available to architects. Kit includes technical information on suggested applications. Suggested specifications and detail drawings are designed to aid architect.

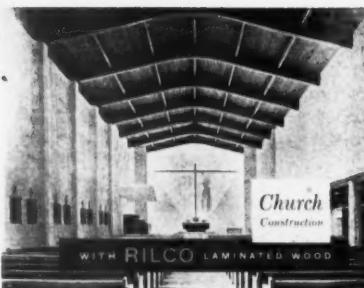
AIA FILE NO. 35-H-6
MFR: MILLS COMPANY
Circle 318

WOOD USES

HARDBOARD HISTORY

The Story of Hardboard, covers the discovery, raw materials used, manufacturing processes, distribution and recommended usage of this product. Also discussed are the types, textures and sizes of hardboard and its exact nature. This is the first booklet of its kind to be published by the hardboard industry.

AIA FILE NO. 23-L
ASSN: AMERICAN HARDBOARD ASSN.
Circle 319

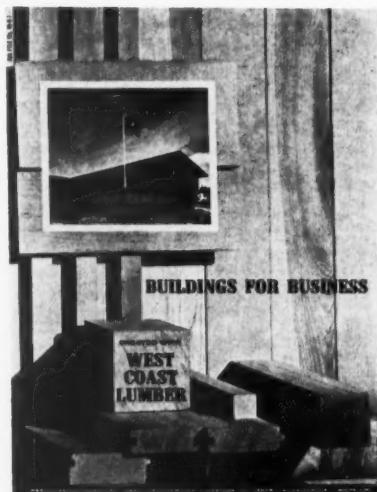


CHURCHES BUILT OF WOOD

New brochure covers use of laminated wood structural members in church construction. Manual contains various illustrations of churches constructed with manufacturer's line of construction members. Floor plans, span dimensions, section sizes, and other elements of descriptive information, covering a wide range of church designs, are included. (12 pp.)

AIA FILE NO. 19-B-3
MFR: RILCO DIV., WEYERHAEUSER CO.

Circle 320



COMMERCIAL WOOD BUILDINGS

Full color photographs picturing outstanding commercial buildings are feature of a new brochure. A wide range of buildings is included, each using wood to achieve certain design objectives. Each photograph is accompanied by explanatory text, including dimensions and species of lumber used, and listing name of architect. (12 pp.)

AIA FILE NO. 19-A-1
ASSN: WEST COAST LUMBERMEN'S ASSN.

Circle 321

UTILITY GRADE LUMBER

A specific type and species of utility grade lumber is pictured, described and discussed in a new booklet. Photographs picture utility grade

lumber in use as floor joists, subflooring, studs, sheathing, ceiling joists and roof rafters. One section deals with exposed laminated roofs. Various other methods and uses are covered. (8 pp.)

AIA FILE NO. 19-A-1
ASSN: WEST COAST LUMBERMEN'S ASSN.

Circle 322

LITERATURE ON HARDBOARD

Folder shows hardboard installations and lists complete specifications on on sizes and thicknesses of a line of hardboard paneling. Four new textures in this line are shown, along with full-color photographs of installations. Abrasion resistance, stability, weathering, interior and exterior applications, finishes and physical properties are covered.

AIA FILE NO. 23-L
MFR: EVANS PRODUCTS CO.

Circle 323

OFFICE AIDS

FILING CABINETS

Folder illustrates a new line of moderately priced filing cabinets including 2, 3, 4, and 5 drawer files. Both letter and legal sizes are discussed along with other features and accessories. (6 pp.)

AIA FILE NO. 35-H-42
MFR: YAWMAN & ERBE MANUFACTURING CO., INC.

Circle 324

SPECS KIT ON SEALS

Manufacturer offering architects and engineers a kit of suggested master specifications in short and long form for use in specifying its products. Included in kit are specifications on a line of seals and gaskets for masonry construction as well as waterstops for sealing construction joints and expansion joints in concrete.

AIA FILE NO. 4-E-11/17-J
MFR: WILLIAMS EQUIPMENT & SUPPLY CO., INC.

Circle 325

DRAFTING TABLES

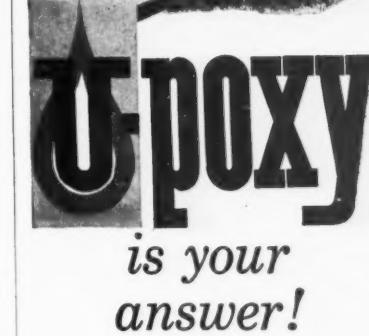
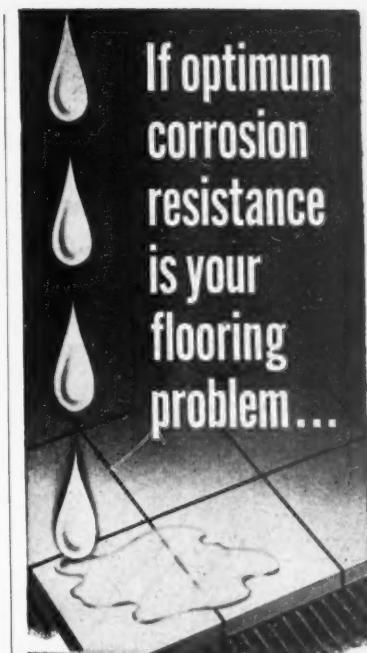
A line of counterbalanced drafting machines and tables are described and priced in a new folder. Full descriptions of this line of products, including suggested uses and accessories are covered.

AIA FILE NO. 35-H-3
MFR: OZALID DIV., GENERAL ANILINE & FILM CORP.

Circle 326

DECIMAL EQUIVALENT CHART

A new decimal equivalent chart, designed for quick conversion of wire gauges and fractions to decimals, is now available. Chart, printed in color on coated heavyweight card stock, measures 11"x14" and is suit-



**Revolutionary New Epoxy
Grout and Setting Compound
Makes Joints as Impervious
to Corrosion as the Tile Itself!**

Ideal for dairies, packing plants, canneries, bakeries, breweries, distilleries, food processing plants — wherever corrosives are encountered. Forms a dense, tight joint of phenomenal strength. For new installations or re-grouting existing floors. Only water is needed for clean-up. Details in Sweet's or write for a descriptive catalog.

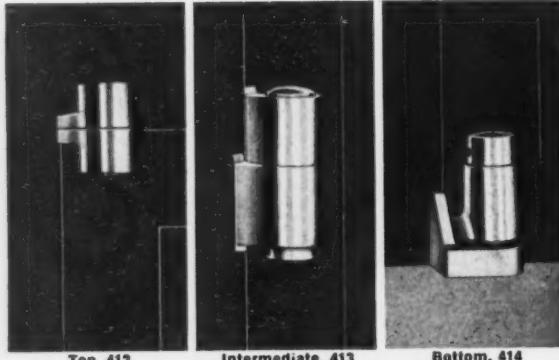


THE UPSCO CO.
4805 Lexington Ave., Cleveland 3, Ohio

Circle 137 for further information

FROM RUSSWIN

**trim, attractive
pivot hinges with
built-in adjustment
for heavy doors**



Top, 412

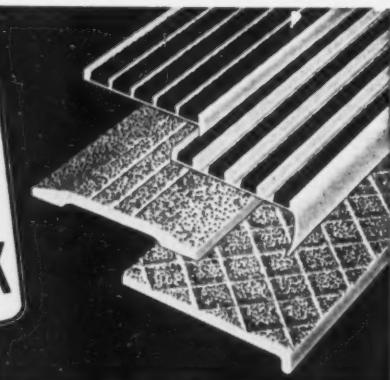
Intermediate, 413

Bottom, 414

Russwin Adjustable Pivot Hinges provide simple correction of door sag . . . permit proper weight distribution. Equipped with ball and roller bearings. Designed for life-time service on heavy doors. For details, write Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

Circle 138 for further information

**SHIP
FROM
STOCK**



No. 101—Ferrogrit and Alumogrit. 3" and 4" widths.

No. 131—Super-Grit. 3" width.

No. 46—Safe-Groove. 3" width.

No. 115—Ferrogrit & Alumogrit. 4", 5" and 6" widths.

**Quality, anti-slip
abrasive metal
WOOSTER SAFETY TREADS
AND THRESHOLDS**

Stock lengths: Nosings 2'0", 2'6", 2'9", 3'0", 3'3", 3'6", 3'9", 4'0", 4'3", 4'6", 4'9", 5'0", 5'6", 6'0". Thresholds 2'6", 2'8", 3'0", 3'4", 4'0", 5'0", 6'0".

Other lengths and widths to order.

WOOSTER PRODUCTS INC.
Spruce St., WOOSTER, OHIO

All stock orders received by 11 A.M. are guaranteed to ship the same day. CALL ANgelus 2-8065.

Circle 139 for further information

LITERATURE

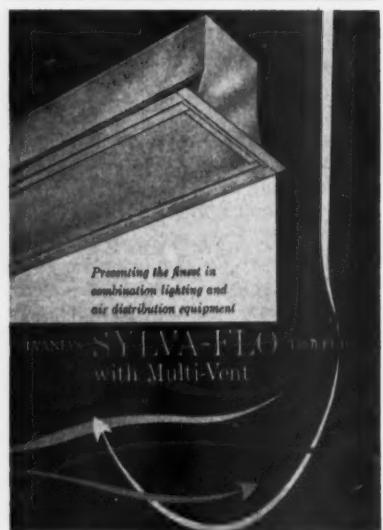
able for convenient desk-top or wall locations. Wire gauges from 36 to 1 and fractions from 1/64" to 63/64" are shown in a combination color-position code to facilitate rapid identification.

AIA FILE NO. 31-C-61

MFR: OHIO SEAMLESS TUBE DIV., COPPERWELD STEEL CO.

Circle 321

HVAC



*Presenting the front in
combination lighting and
air distribution equipment*

INNOVATION SYLVANIA-FLO
with Multi-Vent

AIR-HANDLING TROFFER

Combination air-handling troffers are the subject of a new brochure. Brochure contains illustrations and technical information in the form of tables and charts covering photometric and air distribution data plus specification data. (20 pp.)

AIA FILE NO. 30-J/31-F-21

MFR: SYLVANIA LIGHTING FIXTURES

Circle 328

ROOF VENTILATOR

Details, specifications, dimensions and performance data on four types of propeller fan-powered roof ventilators are included in a recently issued brochure. Equipment covered in manual includes two vertical discharge units, a mushroom head and a reversible roof ventilator. (16 pp.)

AIA FILE NO. 30-D-1

MFR: HARTZELL PROPELLER FAN CO.

Circle 329

HEATING/COOLING EQUIPMENT

A comprehensive 22"x17" portfolio containing six master sheets on a line of heating and cooling equipment is available to architects and engineers. Sheets give complete descriptions, operating details, and installation procedures on zone heating

NEW FROM REVOLUTE: the rockette

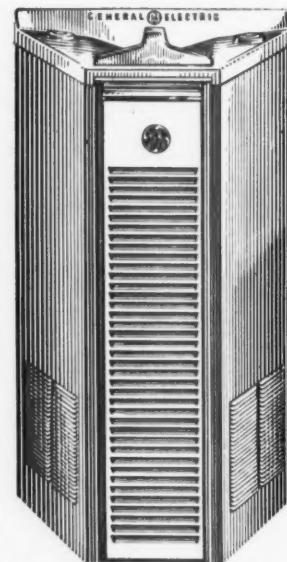
REVOLUTE QUALITY IN A LOW-COST WHITEPRINTER



Rockette prices start below \$1600. Yet Rockette offers full 42" printing width . . . speeds of 15, 25, or 35 fpm . . . table-top or floor stand models. Available with automatic developer control. (Only Rockette has it at this price.) WRITE FOR BULLETIN A-2857. Charles Bruning Company, Inc., 1800 Central Road, Mt. Prospect, Ill.

Circle 140 for further information

NEW Space-Saving Shape in Water Coolers



GENERAL ELECTRIC'S
MODERN, TRAPEZOID
FLUSH-TO-WALL
DESIGN

THREE-WAY
APPROACH
SAVES AISLE SPACE

WALL OR
FLOOR MOUNTED &
HOT-&COLD MODELS

WRITE FOR:
Architects' Specifications
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Commercial Equipment
Department, Section 761-18,
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Progress Is Our Most Important Product

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Circle 141 for further information
Architectural & Engineering News

LITERATURE

and cooling of residences, apartments, churches, motels and older homes. In addition, there is a sheet which describes a new electro-hydraulic heating system.

AIA FILE NO. 30
EDWARDS ENGINEERING CORP.
Circle 330

KITCHEN/BATH VENTILATORS

Brochure covers ventilators for baths and kitchens. Included are ventilators for wall and ceiling installation and combination ventilator-light and ventilator-light-heater units. Specifications, dimensions and construction details of each ventilator model are included. Color-keyed diagrams illustrate wiring and ducting. (12 pp.)

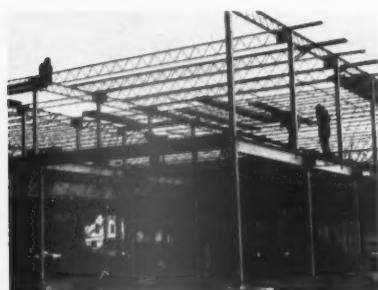
AIA FILE NO. 30-D-1
MFR: FASCO INDUSTRIES
Circle 331

METAL USES

STEEL DESIGN ENGINEERING

Four papers which discuss continuing advances in the strength levels, product forms and design applications of structural steels are published in a new brochure. The various papers describe and compare types of steels that make up manufacturer's line of modern structural steels. Illustrations and descriptions of many actual designs and design concepts show how these steels can be used in structures to achieve higher strength, lighter weight and lower costs. (59 pp.)

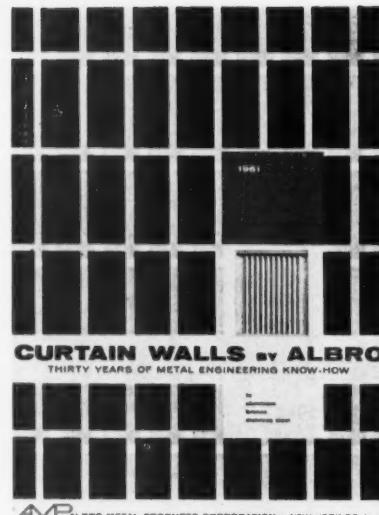
AIA FILE NO. 15-H
MFR: U. S. STEEL CORP.
Circle 332



STRUCTURAL TUBING

A major manufacturer of hollow structural tubing has issued a specifying guide on a new line of tubing products. Brochure discusses the lighter weight, greater strength inherent in the tubing, as well as other properties. (4 pp.)

AIA FILE NO. 13-A-1
MFR: NATIONAL TUBE DIV., U. S. STEEL CORP.
Circle 333



METAL CURTAINWALLS

Booklet describes use of metal curtainwalls in commercial, monumental and institutional structures. Details, photographs, application and related data are used throughout booklet. Examples are given of manufacturer's series of curtainwalls designed for buildings of various heights. General specifications, a list of representative installations and photographic examples are given. (16 pp.)

AIA FILE NO. 17-A
MFR: ALBRO METAL PRODUCTS CORP.
Circle 334

MISCELLANY

EMERGENCY LIGHTING

What happens in a power failure, and how risks can be avoided is shown in a new booklet. The probability of power failure and costs involved, as well as information and specifications on a line of battery-operated emergency lighting are also covered. Typical installation diagrams and approximate costs are included. (12 pp.)

AIA FILE NO. 31-F-26
MFR: ELECTRIC CORD CO.
Circle 335

LETTERS/SIGNS

Brochure displays a line of signs and lettering available for architectural use. In addition to signs and lettering; floor standards, markers and accessories available on custom orders are discussed.

AIA FILE NO. 15-R-1/24-C/31-F-27 & 35-H-9
MFR: WINTERS SIGNS
Circle 336

FLOOR MAINTENANCE

A major manufacturer of flooring materials has made available a brochure which covers maintenance of commercial floors. Routine and heavy

maintenance of various flooring are discussed as well as recommendations for eliminating unnecessary cleaning. (21 pp.)

AIA FILE NO. N/A
MFR: ARMSTRONG CORK CO.
Circle 337

SCHOOL ROOM EQUIPMENT

New school room equipment manual describes and illustrates a line of chalkboards, bulletin boards, specialty equipment, aluminum trim and accessories. Manual offers complete information on each product, including specifications and technical data as well as line drawings showing

construction details and recommended installation. (32 pp.)

AIA FILE NO. 35-B-1
MFR: CLARIDGE PRODUCTS & EQUIPMENT INC.
Circle 338

FOOD SERVICE UNITS

New, full-color manual discusses a line of stainless steel soda fountains and fast food service units. Decorative fronts of plastic laminate are displayed. (6 pp.)

AIA FILE NO. 35-C-12
MFR: BASTIAN-BLESSING CO.
Circle 339

Get ZERO's new 1961 Catalog, with full size details of the complete line of saddles & weather stripping. Write for your copy today!

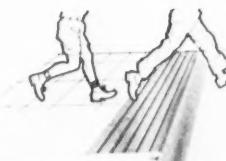
ZERO HAS THE WEATHER STRIPPING YOU NEED



ZERO Weather Stripping for:

- Doors
- Windows
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• Soundproofing
• Sliding Doors
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• Saddles for Floor Hinged Doors



NON-TRIP SADDLES

For out-opening doors in schools and hospitals where safety is important. Available in extruded bronze or aluminum.



ZERO WEATHER STRIPPING CO., INC.

451 East 136th St., New York 54, N.Y. • Ludlow 5-3230

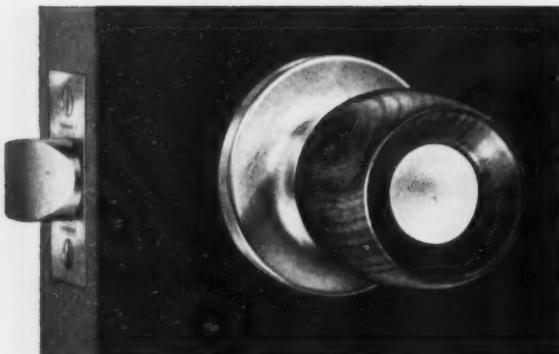
SEE OUR CATALOG IN SWEET'S
ON WRITE FOR COPY

19b-ZER

Circle 142 for further information

FROM RUSSWIN

**heavy-duty
cylindrical locksets
with knobs of
rich, rare woods**

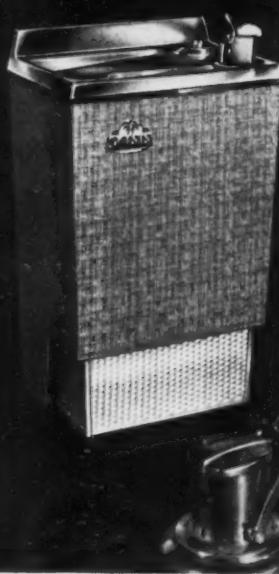


Russwin Stilemaker Doorware with distinctive knobs of cocobolo, rosewood, walnut, or ebony is designed to enhance any interior. Extremely durable. Beautifully finished. Meets Federal Specification No. 161. UL listed. For details on the complete Stilemaker line, write Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

Circle 143 for further information



New From EBCO
The durable beauty
of VINYL
on a Water Cooler



OASIS
America's Preferred
WATER COOLERS
BY THE EBCO MANUFACTURING COMPANY

Circle 145 for further information

SPEAKMAN® LIFESAVER® self-cleaning emergency shower

Instantly floods worker under a rinsing deluge . . . drowns flames, washes off acids, chemicals and fumes. Carefully inspected and tested under water pressure. For indoors and outdoors.



LIFESAVER S-2075

Size 1 inch. 8-inch cast brass self-cleaning shower head with special impeller deluge action adjustable face. Discharges up to 41 gallons per minute.

Speakman Safety Showers are available in many types, sizes and combinations. For complete descriptions, write to Dept. AN, ask for Safety Booklet S-88-B.

SPEAKMAN COMPANY
WILMINGTON 99, DELAWARE

In Canada write CUTHBERT-SPEAKMAN, Montreal 3, Canada

Circle 144 for further information

A beauty to behold...mar-resistant vinyl clad steel...Silver Spice color...brilliant anodized aluminum grille.

Mounts flush to wall, off-the-floor at any height for easy cleaning. Conceals all plumbing. High anti-splash shield. Gleaming, hand polished, stainless steel top whisks clean in seconds.

Proven superior. Greater efficiency and better performance than central cooling systems. Precision engineered for trouble-free service and long life. Two capacities: 7 and 13 GPH.

Full 5-year EBCO warranty covers all parts. Best warranty in the industry.

WRITE FOR FREE VINYL SAMPLE. Vinyl laminated steel swatch in Silver Spice color available on request. Write: The EBCO Mfg. Co., Dept. 7-W, Columbus 13, Ohio. (See Sweet's A.I.A. File No. 29-D-42)

OASIS

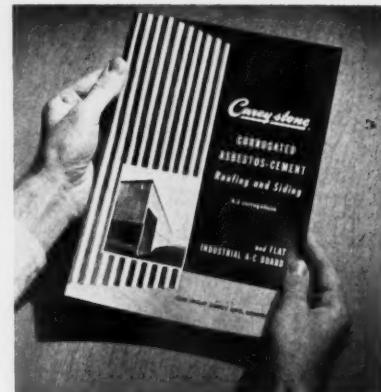
America's Preferred
WATER COOLERS

BY THE EBCO MANUFACTURING COMPANY

52



LITERATURE



ASBESTOS-CEMENT SIDING

Literature includes details on corrugated roofing and siding sheets, corrugation pitch information and specification data. Call-out type drawings show staggered-joint application with cut corner sheets. Other construction details include drawings for asphalt enclosure strips, ridge and corner rolls, fasteners, and clips and bolts for roofing and siding. (4 pp.)

AIA FILE NO. 12-B-3

MFR: THE PHILIP CAREY MANUFACTURING CO.

Circle 340

PRE-ENGINEERED BUILDINGS

A line of self-supporting, pre-engineered metal buildings designed to meet small building requirements are covered in a recently published booklet. Brochure gives complete specifications of the buildings, and illustrates applications ranging from field offices and school classrooms, to loading docks, service buildings and utility sheds. (6 pp.)

AIA FILE NO. 17-A

MFR: PARKERSBURG RIG & REEL CO.

Circle 341

TESTING EQUIPMENT

A new brochure discusses a line of new products for engineering tests. Over 35 new devices for testing soils, concrete, bituminous materials and construction materials are illustrated and described. (12 pp.)

AIA FILE NO. 1-D

MFR: SOILTEST, INC.

Circle 342

FLOOD LIGHTING POLES

Steel poles for stadium flood lighting, playgrounds, driving ranges and security areas are discussed in a recently published brochure. Complete specifications, load limits, deflection data and other pertinent engineering information is included. (12 pp.)

AIA FILE NO. 31-F-2

MFR: WELD-RITE CO.

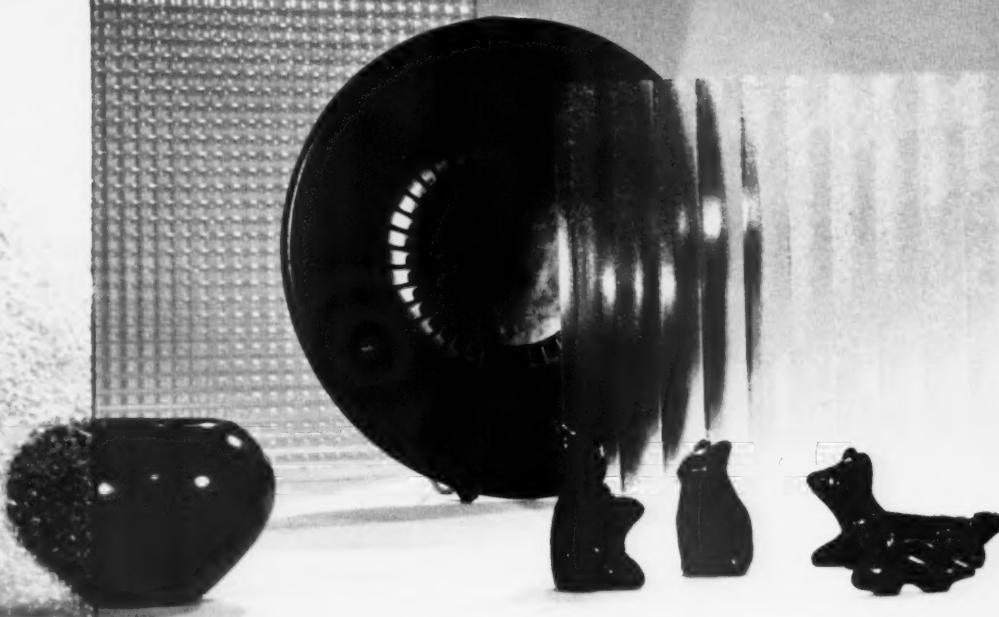
Circle 343

Circle 146 for further information about
MISSISSIPPI GLASS →

Architectural & Engineering News

MISSISSIPPI GLASS . . .

*Finest
Achievement
of the Glass
Manufacturers'
Art*



COOLITE

MAGNALITE B

Pottery by MARIE of San Ildefonso

BROADLITE

Achieving clean, functional, modern design in translucent, light diffusing glass doesn't just happen. It is the result of painstaking research, skilled craftsmanship and manufacturing techniques. That's why figured glass by Mississippi promotes truly functional architecture adapted to present day needs... offers unusual beauty, utility, and variety unmatched by any other glazing medium. And it is the reason why Mississippi's distinctive patterns and surface finishes blend subtly with any exterior or interior to provide

dramatic texture that enhances the appearance of any structure. And remember . . .

New horizons for glass... promise of the future... will come from the facilities of Mississippi Glass Company.

NEW CATALOG—Contains pattern descriptions, light distribution charts, transmission data. Send for your free copy today.



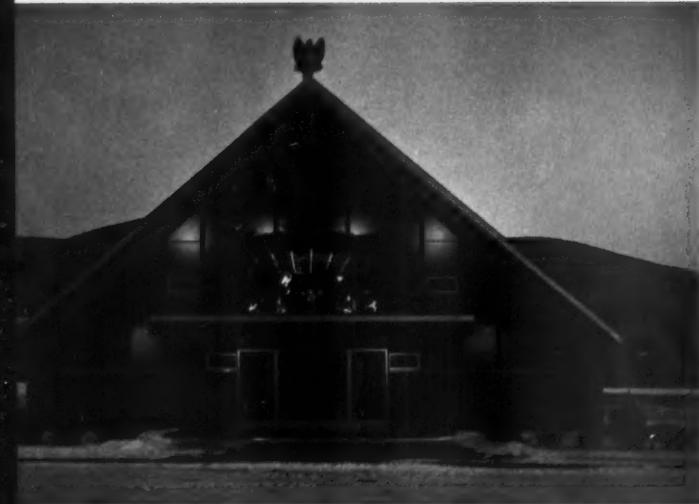
MISSISSIPPI GLASS COMPANY

88 Angelica Street, St. Louis 7, Missouri

NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

CREATE A WHOLE NEW WORLD

OF Beauty and Utility with...



Coolite, glare reduced one side, installed in
St. Bridget's Church, Copake Falls, N.Y.

Architects: Cataldo & Vikre, A. I. A., Schenectady, N.Y.
Glass by: Pittsburgh Plate Glass Company, Poughkeepsie, N.Y.
Glazing by: James S. Sucato
General Contractor: A. Testa & Sons
Color photo, courtesy of
Rev. Gerald F. Millett

**SEE OUR CATALOGS
IN SWEET'S:**

Industrial	6A
Construction	Mis
Plant	10A
Engineering	Mis
Architectural	7A
Light	Mis
Construction	2D

HEAT ABSORBING GLASS

Key factor complimenting architectural beauty and design, Coolite, Mississippi's Heat Absorbing Glass, provides eye-pleasing daylight while absorbing and intercepting infra red rays. The composition and color of this glass change the character of the light while the glare reducing finish, applied to either or both surfaces, thoroughly diffuses the light with an even spread of adequate illumination from which much of the sun's heat has been removed. By filtering out the unwanted factors in "raw" sunlight, interiors are cooler and more comfortable. Occupants see better, feel better, in daylight that has been Coolite-conditioned.

Glass by Mississippi for better daylight is also available in a variety of patterns and surface finishes (with or without wire) that fulfill the primary function of diffusion, decoration, and protection. See your nearby distributor of quality glass.



Coolite Wire Glass graces Prince of Peace Lutheran Church,
Phoenix, Arizona. A striking example of architectural beauty
and perfection of design made possible with translucent,
light diffusing glass.

Glazing contractor: W. P. Fuller & Company



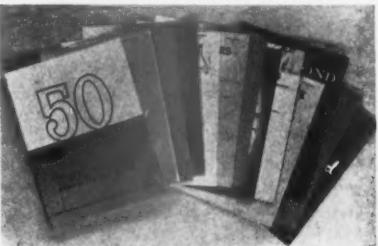
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NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

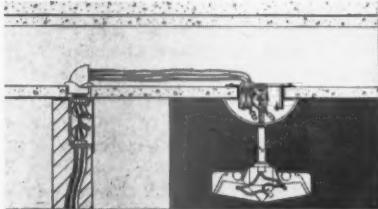
LITERATURE



CONCRETE ACCESSORIES

Handbook covers a line of more than 400 products for use in concrete construction. Manual consists of 12 separate bulletins, of between 4 and 24 pages each. They are enclosed in a loose-leaf cover which also contains a cross index for products and types of construction.

AIA FILE NO. 3-M/4 /27
MFR: RICHMOND SCREW ANCHOR CO., INC.
Circle 344



CONCRETE AS RACEWAY

New manual explains use of hollow-core precast concrete floor and roof slabs as raceways for electrical wiring. Covered in book are (1) ways of introducing wiring into hollowcores; (2) ways of feeding fixtures from core; and (3) other common methods of installing electrical wiring. (16 pp.)

AIA FILE NO. 4-K
MFR: THE FLEXICORE CO., INC.
Circle 345

BUILT-IN MOLDED DRAWERS

Booklet covers built-in molded drawers for commercial and institutional applications. Drawings illustrated typical installations accompanied by text which demonstrates advantages of molded drawers over other forms of manufacture. (6 pp.)

AIA FILE NO. 28-A-4
MFR: MONSANTO CHEMICAL CO.
Circle 346

ARCHITECTURAL HARDWARE

Manufacturer of contemporary and traditional door hardware for residential and commercial establishments has released a brochure covering its line of products. 156 cross-sectional drawings, photographs and illustrations display prod-

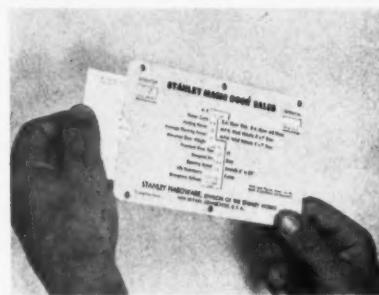
ucts, accessories, applications and installations. (26 pp.)

AIA FILE NO. 27-B
MFR: SCHLAGE HARDWARE CO.
Circle 347

MECHANICAL DOOR MAT

Brochure explains a mechanical door mat that automatically cleans shoe soles at entrances. Drawings, photographs of various models and residential sizes are also shown. (4 pp.)

AIA FILE NO. 35-J
MFR: PROGRESSIVE ENGINEERING CO.
Circle 348



CALCULATOR FOR DOORS

Handy calculator which provides instant information on dimensions and duties of a line of automatic doors. Calculator also supplies information on horsepower, door size, speed, life expectancy and other factors.

AIA FILE NO. 16-D
MFR: STANLEY WORKS
Circle 349



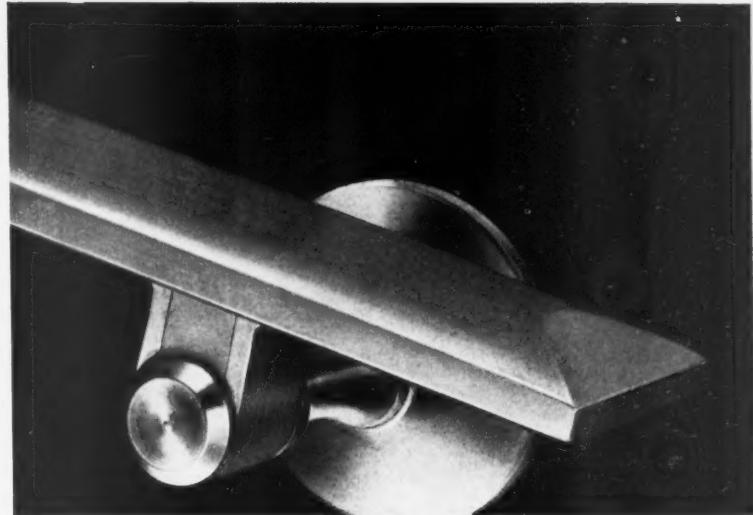
COLOR-STYLED EXIT DEVICES

A new color-styled line of rim, mortise lock and vertical rod exit devices are discussed in a recently published brochure. Brochure displays various types of door hardware available, and variety of colors usable for contrasting or matching of door hardware with remainder of room or building. (8 pp.)

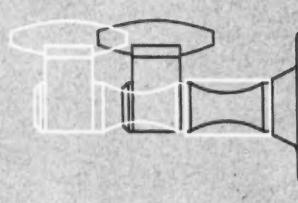
AIA FILE NO. 27-C
MFR: VONNEGUT HARDWARE CO.
Circle 350

← Circle 146 for further information about MISSISSIPPI GLASS

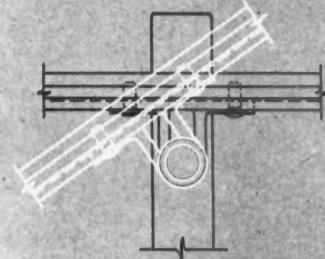
August 1961



CARLSTADT® ALUMINUM RAILINGS



WALL BRACKET EXTENSION



ADJUSTABLE BRACKET

BRACKET IN A CLASS BY ITSELF

Wall brackets, like other components of Julius Blum's Carlstadt railing system, combine design flexibility with quantity-production economy. Adjustable for any railing pitch and now also for variations in handrail-to-wall distance, these versatile brackets can be anchored easily to any kind of wall surface. Designed for maximum strength, Carlstadt components will withstand even the hard usage encountered in schools and public buildings. The architect can choose from a wide variety of stock handrails, posts and accessories. And Carlstadt railings are easy to fabricate and install. For the complete range of components, see Catalog No. 8 or Sweet's Architectural File No. 6e/BL.

More than 8,000 items constantly in stock.



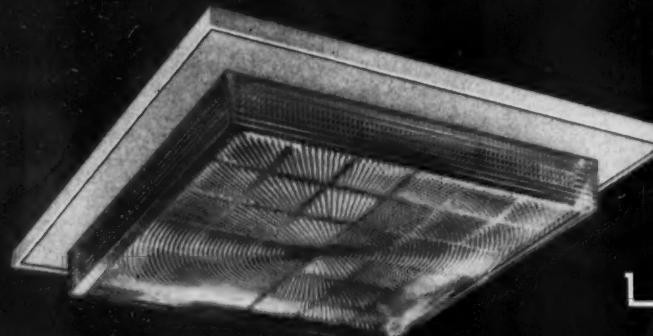
JULIUS BLUM & CO., INC.,
Carlstadt, New Jersey
Phones:
Carlstadt, GEneva 8-4600;
Philadelphia, MArket 7-7596;
New York, OXFORD 5-2236

Circle 147 for further information

OPTICAL TRAIN

In PAL Luminaires the prismatic glass reflector is precisely designed to coordinate with the Controlens (any one of three interchangeable contours). Prismatic control assures total luminosity, complete absence of glare.

Your Choice of 3 CONTROLENS® in Holophane® *PAL® Luminaires



① CONCAVE

② DROPPED TRIM

③ PLANE

*Positive Automatic Latching

Flexibility for Versatility

Designer's Choice . . . Three prismatic lenses with different contours—"concave", "dropped trim" and "plane"—permit an unusually broad scope of design expression. Luminaires can be applied as individual tile-fitting units or as matched combinations, 2 in line or 4 square.

Engineer's Preference . . . The optical train consistently produces the highest lighting performance, directing maximum illumination where it is most required. Wide range of possible lighting levels—choice of 150, 200 or 300 Watt lamps.

Budget-Maker's Selection . . . Positive Automatic Latching works simply for quick, low cost relamping and servicing—push against lens to open, push against trim to close....Glass components are easy to clean, eliminate deterioration. PAL Luminaires are economical to install and maintain.

Write for engineering data.

HOLOPHANE COMPANY, INC.

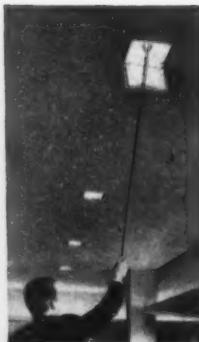
Lighting Authorities Since 1898

342 Madison Ave., New York 17, N. Y.

THE HOLOPHANE CO., LTD., 418 KIPLING AVE. SO., TORONTO 18, ONT.



PAL Installation in
MACY's, (N.Y. Dept. Store)



Positive Automatic
Latching Works Simply

ABSTRACTS

Materials, technique and form

"The Influence of Reinforced Concrete and Technical and Scientific Progress on the Architecture of Today and Tomorrow" was the subject of an address by Pier Luigi Nervi before last month's congress of the International Union of Architects in London. We present here Professor Nervi's concluding remarks, which reflect his point of view on style.

". . . The catenary curve of a big suspension bridge is fixed and unalterable in time and place; a dome of a hundred metres or more, or a vault of equivalent size, must obey structural laws which cannot be disobeyed without intolerable increases in cost and waste of material.

If an architect today wished to build a dome, more than a hundred meters across, the shape of the Taj Mahal, he would very soon find such an architectural formalism impossibly expensive and would quickly be lead back to structurally better shapes. And if we bear in mind that even for less daring buildings the most convenient solutions are those based on simple structures, it is easy to see that pressure in favor of structurally better solutions will become continually more decisive.

Finally, if we add that in other fields, especially that of high speed on land or water or in the air, the shapes of our creations tend, in the constant search for maximum efficiency, to approach an ideal form in perfect harmony with the laws which govern dynamic equilibrium and resistance to movement, it is easy to see that every day we come into contact with things whose forms are determined by natural factors which we can only press into service, but cannot interfere with or modify. Unless we foresee in the near or more distant future a voluntary abandonment of science and a return to the empiricism of the past (an event which really seems unlikely and even less to be hoped for), it becomes plain that the number and expressive efficiency of these creations in perfect accord with the laws of physics will continually increase.

In the field of architecture this will mean a progressive trend towards the ideal buildings which because of their perfect adherence to the laws of structural equilibrium, represent the goal of perfect technology. We are witnesses of a grandiose spectacle: technical progress which, after all, is only the continual search for the maximum return (in the widest sense of the word) is driving a host of human creations in directions indicated by the signposts of immutable phys-

(Continued on page 59)

← Circle 148 for further information

THE ANATOMY OF A PROJECT

PREVIEW:33

PHILHARMONIC HALL, NEW YORK
 LINCOLN CENTER FOR THE PERFORMING ARTS, INC.
 MAX ABRAMOVITZ, OF HARRISON AND ABRAMOVITZ

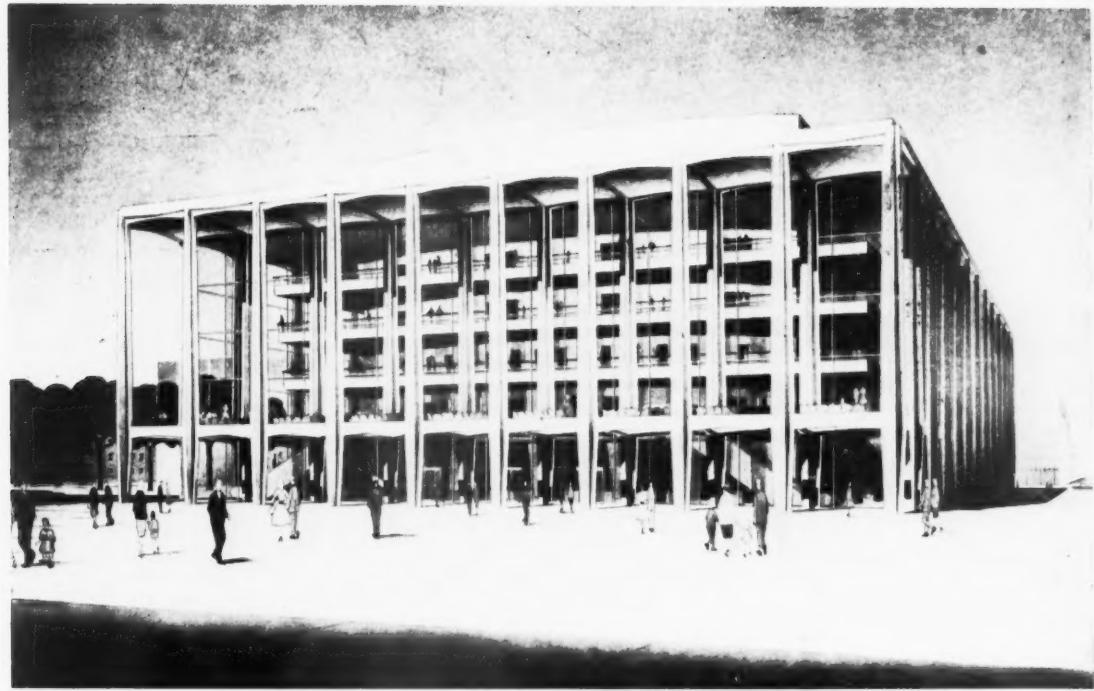
BOLT, BERANEK AND NEWMAN, INC.

AMMANN AND WHITNEY
 SYSKA AND HENNESSY, INC.

PROJECT
 CLIENT
 ARCHITECT

ACOUSTICAL CONSULTANTS

STRUCTURAL ENGINEERS
 MECHANICAL ENGINEERS



VIEW OF PHILHARMONIC HALL FROM PLAZA

Topping out ceremonies recently marked completion of work on the highest point of the new nine-story Philharmonic Hall, which will provide the 120-year old New York Philharmonic Orchestra with its first permanent home. The Hall is scheduled to open in September 1962.

It is located in the northeast section of Lincoln Center's three and a half block site; fronting on the Center's main plaza, it will extend north along Broadway and Columbus Avenues between 64th and 65th Streets, occupying a plot as large as that of the present Metropolitan Opera House.

An underground concourse will connect the Hall with the subway. Also, an underground roadway will allow taxis and cars to discharge passengers at the door. A 732-car garage to be built beneath the plaza will likewise connect with the Hall.

The exterior will be faced with tan-colored Roman travertine. Between the exterior cross-shaped piers, metal-framed windows of clear glass rise 70' from street-level to roof, thus making visible from outside the form of the auditorium and the promenades.

The auditorium

The auditorium seats 2612. Its three terraces—six rows deep at the back and two to four seats wide at the front—surround the orchestra level and flow towards the orchestra platform. They are so designed that every seat has an excellent sightline directly towards the orchestra. Traditional boxes have given way to loge-type seating to achieve maximum capacity within the strict size limits set by acoustical considerations. The orchestra has 1388 seats; the orchestra circle 396, including 170 loge seats; the first terrace 436, and the second terrace 392.

For "pops concerts", the orchestra floor can be readily converted to several terraced platforms and its 1388 seats replaced by tables and chairs seating about 800. Refreshments can be served from two adjoining pantries.

Interior walls and ceiling are blue. The orchestra platform is surrounded on three sides by a wood grille. Suspended from the ceiling is a grouping of 106 specially designed acoustical panels. These panels will also deflect light, as well as direct light onto the audience.

The widely spaced seats will be covered in warm shades of fabric.

Orchestra platform

The orchestra platform is 61' wide and 40' deep. Large platform elevators can increase it to depths of 48' and 56' to accommodate the full orchestra and a chorus of 200, or to allow the orchestra to be arranged for recording programs. When partly depressed, the elevators can form an orchestra pit.

The stage is equipped with a smaller center-stage elevator, and with four outlets for the portable organ console. A large movie screen can be raised from the platform for film programs and illustrated lectures. A smaller television screen can be placed above the orchestra for closed-circuit television broadcasts. A projection booth, above the second terrace, will be available for 35mm. and 16mm. equipment, as well as for the closed-circuit TV projector. The Hall is equipped with a public address system for use during lectures. Power outlets and camera locations are installed throughout the building for TV coverage.

Acoustics

The acoustical qualities of 30 renowned concert halls throughout the world were tested and analyzed. Hope Bagenal, a London acoustics expert, acted as advisory consultant in addition to Bolt, Beranek and Newman. Behind the orchestra platform and on either side, floor to ceiling panels will be installed. These relate to the Hall's 98-rank pipe organ which, by means of back lighting, can be made dominant or recede into the background. Also placed behind the panels are several television and radio platform booths that will allow highly flexible broadcasting of performances in the Hall.

Space behind these panels permits adjustments to balance and distribute sound through the Hall. The large suspended plaster acoustical canopies can be adjusted during the original "tuning" period. The canopy above the orchestra platform can also be raised or lowered to meet acoustical requirements that vary by performance. An organ recital, for example, would require a different acoustical environment from that of a violin recital.

The lobbies

On the plaza level the main lobby extends beneath a portion of the auditorium and contains a large cafe seating 300, where meals and refreshments will be served during the day, as well as in conjunction with performances. There is also a smaller coffee bar, in addition to box-office facilities, cloakrooms and a music shop. Stairs, elevators and escalators connect the various levels.

The orchestra promenade is five stories high, and extends round three sides of the Hall. Looking down upon it are the promenades of the three terraces above. The orchestra promenade leads outdoors to a portico terrace which extends across the front of the Hall and overlooks the plaza 20' below.

Backstage

The backstage area includes off-street loading facilities, extensive storage, as well as lighting, heating and air-conditioning equipment.

Separate lounges and dressing rooms are provided for the Philharmonic and for visiting orchestras, for choruses and soloists. The conductor's retiring room is located off the orchestra platform, and there are also separate tuning rooms for strings, brasses and woodwinds.

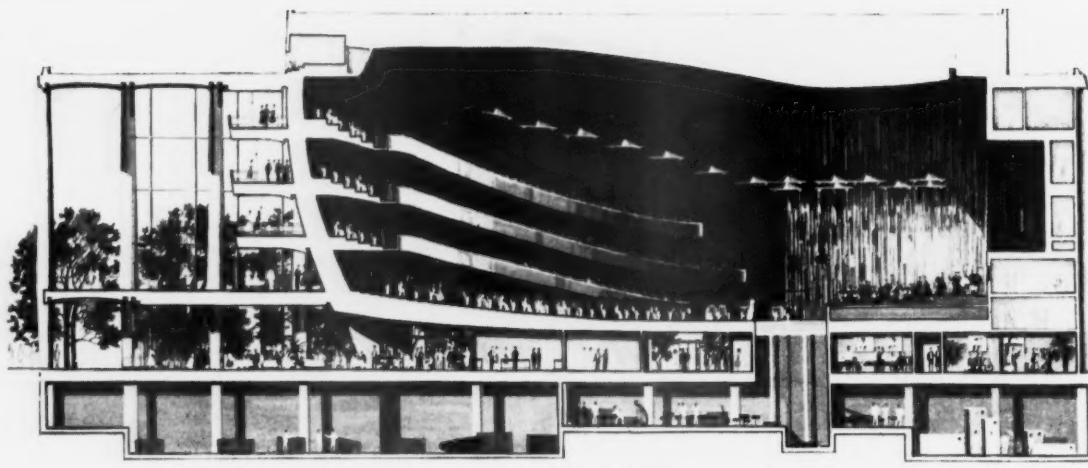
There will be two Green Rooms, and a press room. The upper levels backstage house a large music library and the management offices.

Electrical system

The Philharmonic Hall has a connected electrical load of about 3,000 kilowatts. The building is sub-fed at 460 volts from the Lincoln Center's central mechanical plant. All heavy power users such as elevators, escalators, orchestra lifts, fans and pumps are fed at this voltage. A double ended sub-station with two 1000 KVA dry-type transformers is used to step down the voltage from 460 to 120/208 volts for lighting and miscellaneous small power loads.

Lighting

Platform lighting is designed for a general level of 50 foot candles, with additional front lighting for TV broadcasts.



LONGITUDINAL SECTION THROUGH CONCERT HALL

The main auditorium is illuminated by incandescent downlights and "special effects" lighting. All lighting is controlled by silicon rectifier type dimmers. Overall control is concentrated in a console located in a room overlooking the platform. Local control is provided for work lights and for emergencies. Local control for limited lighting of the auditorium has also been provided for the benefit of sightseers.

The suspended canopies, apart from their primary acoustical function, also serve to support the house and platform lighting fixtures. One group of canopies may be moved up or down over a distance of 36'. This required special design for a folding ladder to support cables feeding the lights.

The curved walls of the auditorium as seen from the lobby and the exterior are lit up by continuous coves. This lighting is also on dimmer control.

Television coverage

To ensure satisfactory coverage of the Orchestra and its ebullient conductor, Mr. Bernstein, an extensive system of cable trays, wireways, conduit and outlet locations is provided for complete flexibility of camera angles. In addition, there is a surveillance camera for fixed "shots" of the stage from the rear of the auditorium and for remote viewing at various locations around the building.

Structural notes

The structural system is a reinforced concrete frame with a 108' folded plate roof over the auditorium. At the plaza end of the auditorium, rear balconies and lobby floors are cantilevered in spans up to 25' from curved columns which follow the auditorium contours. Due to the curvature of the columns, large horizontal forces are transmitted by the lobby floors, acting as diaphragms, to concrete shear walls on either side of the auditorium. These side walls also support the cantilevered side-balconies and main roof spans.

The office floor over the stage is supported on wall-type girders spanning 80'. Lightweight reinforced concrete was used for roof and parts of the cantilevered floors.

Mechanical notes

A dual duct medium pressure forced air circulation system is planned for the performance and service areas. The promenade areas will be heated and cooled by a single duct system.

For cooling, 1000 tons of refrigeration will be required. Chilled water will originate from the central mechanical refrigeration plant. Fifteen air conditioning supply systems will circulate 375,000 cu. ft. of air per minute. In addition, fan coil systems in the exterior promenade areas will supplement the air system at peak solar loads. During the heating season, when exterior promenades are not in use, the fan coil units will provide the necessary heating.

A special feature of the air-conditioning control system for the auditorium is a supervisory data center from which the system operator can "see" the comfort conditions throughout the auditorium, allowing him to anticipate any adjustments. It will, primarily, enable the operator to make these adjustments in the system rapidly to meet the movement of people.

The auditorium air supply system is designed to meet noise level criteria on an NC 20 curve. These curves are a system of designation and denote decibel reduction in different frequency octaves. In this instance, there is a 20 decibel reduction in the 1200-2400 cps octave; a lower reduction at higher octaves; and a higher reduction in lower frequency octaves. To ensure that the air outlets for the hall meet this requirement, a tight sound performance specification was written. An acoustic performance test is to be made for all air outlets to make sure that these conditions are met.

The air supply and return system has packaged sound attenuating units to reduce fan and system noise to the required level.

Cost

Estimated cost is \$15,400,000. This includes fees, equipment, art, furniture, organ as well as standard construction costs.

Cost per sq. ft. and cost per cu. ft. figures are not available at this time.

ABSTRACTS

(Continued from page 56)

ical laws. These creations will constitute points of reference by which taste in other fields may be orientated, which may, in other words, form a 'style'.

"With the passing of centuries, 'styles' have gradually changed either because of natural cultural evolution or because archaeological discoveries or the knowledge of other civilizations brought forward new formal or spiritual ideals; our century will be renowned in the most distant future for having initiated a 'style' of adherence to the laws of physics which can never be changed until humanity renounces the advantages of science to retrace backwards the path it has travelled between pre-history and to-day.

"The style whose beginnings we see can be called an authentic *style of truth*, because the ideal forms which inspire it are true in the fullest meaning of the word.

"The shapes of least resistance to penetration are *true* and immutable. A great arch whose average stress is the curve of its permanent load is *true*; the catenary of big suspension bridges is *true* and immutable; a great iron girder whose profile follows the line of the bending moments is *true*.

"And besides, how can we deny the aesthetic emotion which these ideal forms give us and the sense of sublime serenity which we derive from them?

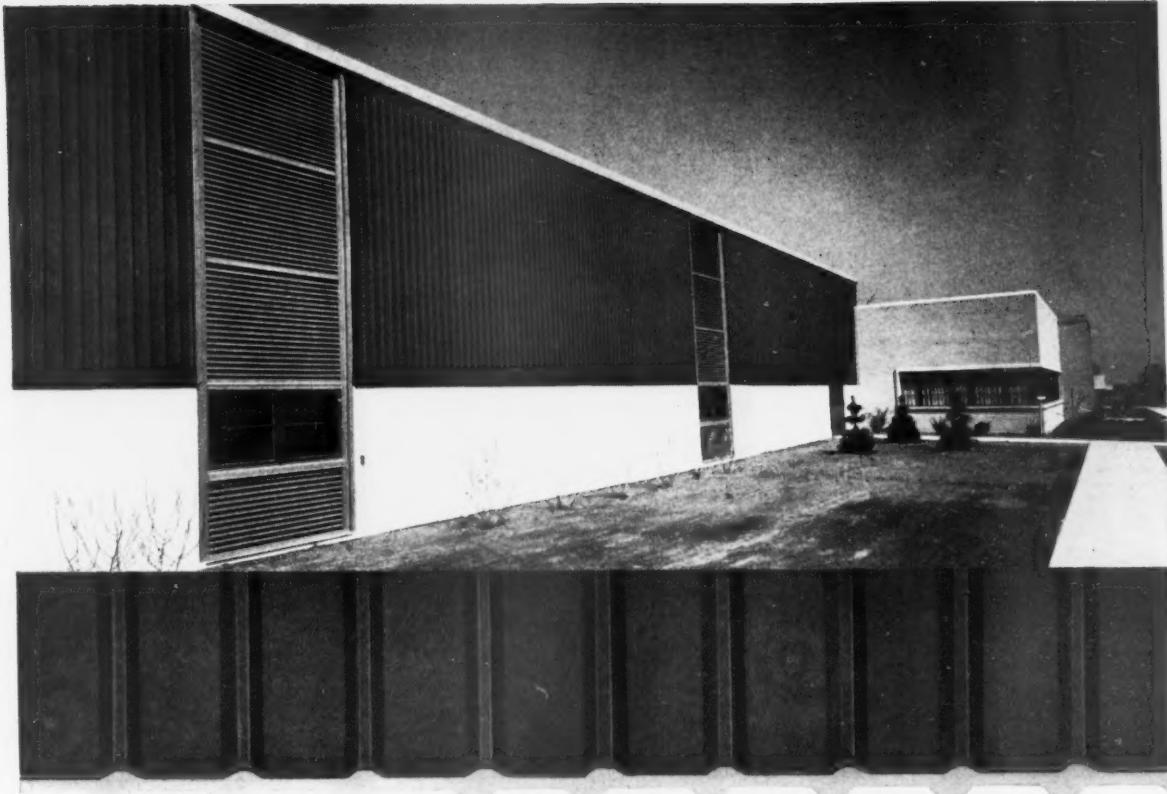
"How can we fail to rejoice at the fact that they can become the guide of mankind's aesthetic taste?

"How can we deny the value of an immutable guide, the same for all men, an efficacious method of promoting universal brotherhood, across all divisions of race, color or religion?

"Why should we fear, as some have, that all this, which is anyway inevitable, may lead to an intolerable monotony, when the past shows us that the general direction given by styles has never hindered the development and the affirmation of individual personalities of nations?

"However, in order that these marvelous promises may be fulfilled, architects must work with engineers and, above all, they must learn to appreciate the true value of Building Science and love it as the composer loves his instruments.

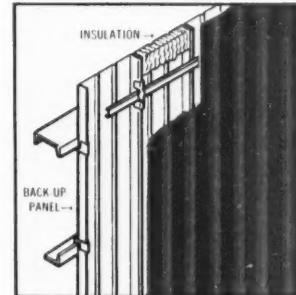
"Only in this way will the architect become the true creator and conductor of the great architectural symphony which to-morrow promises us."



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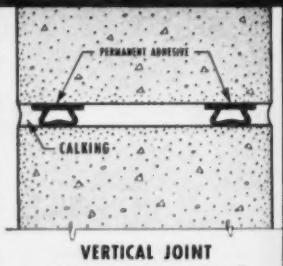
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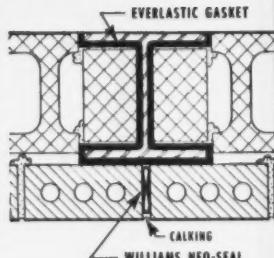
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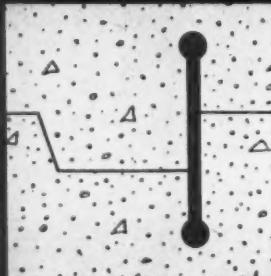
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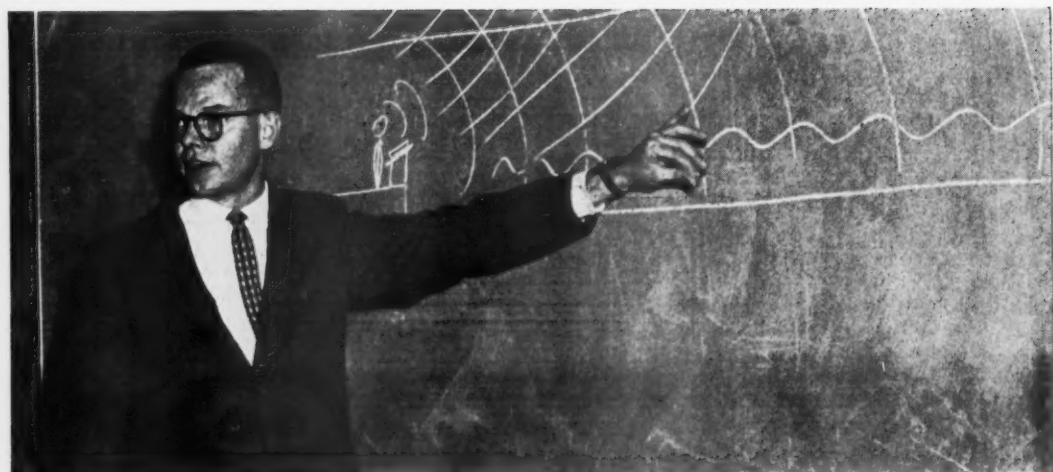
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60

NAMES



ROBERT B. NEWMAN, vice president of Bolt Beranek and Newman Inc., recently left his Cambridge, Massachusetts headquarters for two weeks to go to Singapore, where he proceeded to advise the State of Singapore on the acoustics of its forthcoming National Theater. For those who consider a trip from New York to Newark a major enterprise this sort of staccato globetrotting would appear to be a rather difficult disruption of one's day to day existence. But for Robert Newman this is bread and butter work in every sense of the phrase. For he is one of the world's foremost experts in the relatively obscure—to most people—science of architectural acoustics.

Someone once asked whether a sound was a sound if there was no one around to hear it. It is, listener or no listener. But the sounds which interest Newman and his colleagues are of another type: those which can be heard when they should not be, and those that cannot be heard when they should. To back them in their knowledge Bolt Beranek and Newman Inc., have a highly talented team of specialists in various disciplines involved in architectural acoustics. They are in an elaborate research plant situated on the outskirts of Cambridge. Their studies include everything from the acoustical properties of various materials to the psychological impact of sound on people under different circumstances.

Mr. Newman came to Cambridge the hard way. Born in China, he attended college at the University of Texas, where he received his B.A., and M.A. in physics in 1938-39. He later worked in acoustics research and development at RCA, at the Electro-acoustic Laboratory at Harvard and with the Navy Bureau of Aeronautics in Philadelphia during World War II. In 1949 he received his Master's in Architecture from MIT, and became a member of its faculty the same year. He is now associate professor of architecture at MIT, as well as visiting lecturer in acoustics at Harvard and Yale.

But Newman does anything but spend all his time in the classroom. As supervisor of the work in architectural acoustics at BB&N, he travels frequently. In cases where an already existing building is showing symptoms of acoustic malaise, there is

nothing for it but to pack one's bags and go out and look it over. In the case, however, of a building still on the drawing boards, plans may be studied and models examined at the home office, but even here some discussion with owner and architect on design goals is needed before recommendations can be made.

Bolt Beranek and Newman have collaborated on the acoustical design of over 500 buildings in this country and overseas. Among the more renowned are: UN headquarters in New York City, GM Technical Center in Detroit, Air Force Academy in Colorado Springs, Kresge Auditorium at MIT, the Aula Magna at the University of Venezuela, the National Theater in Havana, a concert hall in Tel Aviv, the Franklin Congress Hall in Berlin and, at the present time, the various theaters and music halls at Lincoln Center. (See PREVIEW p. 57). The latest in the BB&N log is consultation on the proposed new Concert Hall for Pittsburgh.

But Newman hastens to point out that acoustics problems are not restricted to auditoria—all buildings have acoustical problems.

When asked about his experiences with architects' knowledge of acoustics, Newman states flatly that there is room for improvement; he has found a widespread lack of familiarity among architects even with the essentials of acoustics. Reminded that architects rely on Bolt Beranek and Newman to remedy this situation, Newman raises the point that unless architects have a feel for these essentials from the very beginning of design, subsequent errors can be difficult and costly to correct. The earlier acoustics thinking is brought to bear on a project, the greater the likelihood of a good solution.

Newman has a pleasingly irreverent attitude towards most things, not least towards his own field, and that is why his lectures in acoustics are among the more popular items on the students' academic menu. Not that he is flippant; but he sees no cogent reason why acoustics should be made to appear more mysterious than it already seems, by adopting a grave air and long words. He is to acoustics what the *New Yorker* is to weekly journalism: they both know their business but refuse to take themselves too seriously.

DOCUMENTS

The documents listed below are available through the associations and agencies cited. All requests should be directed accordingly.

The American Institute of Architects, 1735 New York Ave., N. W., Washington 6, D. C.

Standard Filing System and Alphabetical Index, AIA Document No. E-301, 1961. \$2.00.

A guide to the AIA standard filing system for filing information on the materials, appliances and equipment employed in construction and related activities.

Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Causes of Variation in Chemical Analyses and Physical Test of Portland Cement by Leonard Bean and John R. Dise, NBS Monograph 28, 1961. 24 pp. 25¢

Lists and discusses many of the causes for variation in chemical analyses and physical test results in comparative tests of portland cements, and suggests remedies for some of the more frequently encountered deficiencies in apparatus and methods.

Building Code Requirements for Reinforced Masonry, NBS Handbook 74, 1960. 15¢

National Concrete Masonry Assn., 1015 Wisconsin Ave., N. W., Washington 7, D. C.

Reinforced Concrete Masonry Columns & Pilasters, 1960. 157 pp., illus. \$2.50.

A detailed analysis of design and construction of reinforced concrete masonry columns and pilasters including tables and formulas for allowable loads, recommended construction practices and details, and report of tests of concrete masonry columns.

Concrete Masonry Foundation Walls, Revised 1961. 92 pp., illus. \$1.50.

Includes sections on foundation loading, waterproofing, condensation, termite protection, erection practices and specifications, typical design calculations, and an illustrated guide of concrete masonry foundation details.

U. S. Department of Commerce, Washington 25, D. C.

Prestressed Concrete Use is Increasing, NR: BD 61-112, 1961. No charge.

Coordination of the Transport and Urban Renewal Program, joint announcement by Secretary of Commerce Luther H. Hodges and the Administrator of the Housing and Home Finance Agency, Robert C. Weaver, NR: G 61-41. No charge.

National Science Foundation, 1951 Constitution Ave., N. W., Washington 25, D. C.

Investing in Scientific Progress, 1961. 30 pp. No charge.

This report carefully analyzes science education trends over the past 40 years and projects these trends to 1970.

American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

ASTM Standards on Mineral Aggregates and Concrete, C-9, D-4, 1960. 396 pp. \$5.75.

Contains approximately 134 standard specifications, methods of testing, recommended practices and definitions of terms for mineral aggregates, concrete, concrete curing materials, expansion joint fillers, reinforcing steel, paving block and brick, and bituminous and non-bituminous road materials. Of these standards, 50 are new, revised, or have had their status changed since the 1958 edition was published.

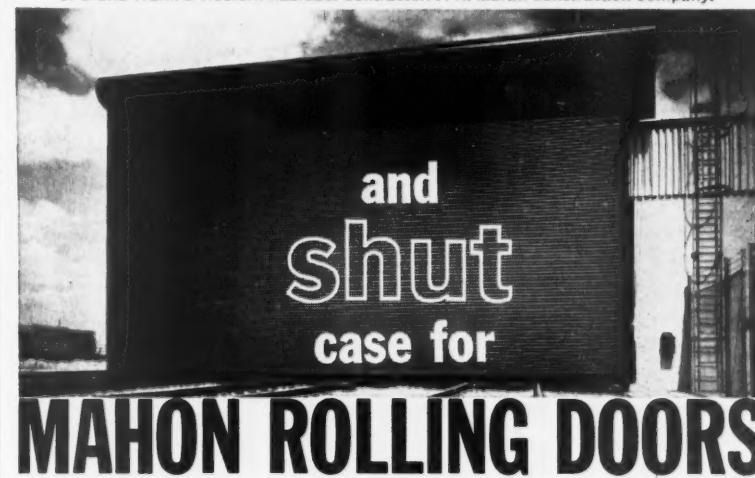
National Electrical Manufacturers Assn., 155 East 44th St., New York 17, N. Y. Minimum order on publications, \$1.00.

Signalling Apparatus for Hospital Staff Paging Systems, Visual Type, SB 7-1961. 35¢

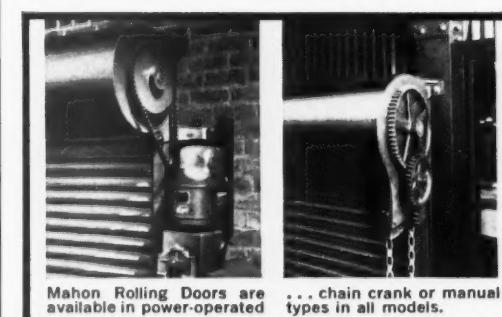
Deals with visual staff paging systems in which operation of a paging keyboard causes illuminated letters or numbers to flash on paging annunciators located throughout a building or buildings comprising a hospital.



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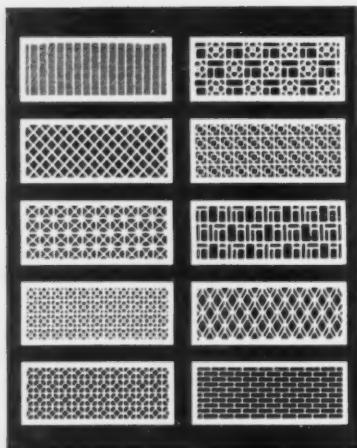
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BOOKS

Prestressed Concrete by James R. Libby. New York: The Ronald Press Co., 1961. 468 pp. \$12.50.

by Harold S. Woodward, P.E.*

A new book on this timely subject will be of interest to both the student and practicing engineer because of its comprehensive treatment of all phases from both the theoretical and practical aspects.

The basic concepts are discussed in the first few chapters as indicated by the chapter headings: Prestressing Methods and Materials; Basic Principles of Flexural Design; Cracking Load, Ultimate Moment, Shear, and Bond. After the reader has these basic principles established the fifth chapter is especially valuable. Here the author endeavors to bridge the gap between the theoretical and practical design methods. He does this by organizing computations and indicating some short cut methods. The practical examples following the theory are of considerable help to the engineer in developing facility in mastering the details of the subject. In the remaining chapters the author covers continuity in flexural members followed by direct stress members together with the effects of temperature, fatigue, and deterioration. Roof and floor framing systems are discussed as well as prestressed concrete bridge framing. The chapter on bridge framing gives many examples of the types of prestressed construction depending on the span. The AASHO-PCI standard bridge stringers are detailed and discussed. This chapter concludes with bridge construction details which would be of practical use for anyone not a specialist in the use of this type of construction system.

To complete the book in respect to the practical aspects, chapters reviewing both pretensioning and post-tensioning equipment are given including details of the various devices used. Plant facilities and fabricating procedures takes the reader through batching, mixing, transportation, placing, vibrating, and curing.

A clear definition and tabulation of symbols used in the book are a necessity. These are well defined in the Appendix. The Appendix also gives

*Mr. Woodward, a professional engineer, is partner in Seelye Stevenson Value and Knecht, consulting engineers, of New York City.

"Tentative Recommendations for Prestressing Steels and Dimensions of Tendon Assemblies and Anchorages," and over three pages of definitions having to do with the subject. Many earlier books on prestressed concrete were written by Europeans. While the theoretical analysis of prestressing has not changed, an American viewpoint, especially as applied to the practical details, is particularly valuable for anyone using prestressed concrete for his first few assignments. This book gives complete coverage to a building material that is gaining wide usage throughout the world and should be a useful addition to an engineering library.

The Consulting Engineer by C. Maxwell Stanley. New York: John Wiley, 1961. 258 pp., \$5.95.

This compact little book tells us how to be a good engineer, an honest engineer and, given a modicum of luck, talent and good business acumen, a successful engineer. It is a comprehensive description of all the aspects of an independent consulting engineer's practice, written by an engineer who himself is senior partner of a firm with a large and diversified practice in this country and in Africa.

The book is divided into two sections, the first dealing, as it were, with the consultant's "foreign relations", i.e. with clients, other professionals and the public. The other section covers exhaustively the various facets of internal organization: personnel structure and management, plant and equipment, accounting and financing, cost and profit. Sample contract forms, grade classification schedules and a suggested classification of accounting items appear in appendices which follow the text.

It is curious to compare this book with an architectural equivalent, the AIA *Handbook of Architectural Practice*, particularly as regards professional ethics. Consulting engineering appears to condone a more active role on the part of the engineer in soliciting work. It also has, on a far greater scale than does architecture, the dichotomy between the engineer in private practice and the staff engineer.

If one may voice an objection to this otherwise very stimulating book, it is to an excess, in the text, of rather obvious definitions, such as: "The sums of money paid to consulting engineers for professional services are called fees," or "if a consulting engineer is to perform competently, he must have adequate compensation to cover costs and allow a reasonable profit." In all,

however, the author's enthusiastic dedication to his profession is evident at every step; and the book should prove valuable not only to other engineers, who can draw upon the author's vast fund of experience, but also to students and present and prospective clients.

SAK

Techniques of Plant Maintenance and Engineering, 12th volume. New York: Clapp & Poliak, Inc. 349 pp., illus. \$10.00.

This is a verbatim report of the Plant Maintenance and Engineering Conference, held in January of this year in conjunction with the Plant Maintenance and Engineering Show. It contains the texts of 37 papers, audience discussions and reports on "problem sessions." Slanted towards the plant engineer, the book is also of value to those involved in plant design and construction.

Modern Architecture in Mexico by Max L. Cetto, New York: Frederick A. Praeger, 1961. 224 pp., illus. \$12.50.

Frame Analysis by A. S. Hall and R. W. Woodhead. New York: John Wiley & Sons, Inc., 1961. 247 pp. \$8.50.

Presents the mathematical analysis of structural frames, covering both principles of flexibility analysis and stiffness analysis in one unifying treatment. Also discusses frames in which the load displacement relationship is linear. Three-dimensional frames containing curved members and members of varying sections are dealt with in detail. Matrix algebra is used extensively; an appendix covering the algebraic treatment is included.

Builder's Hardware Book, Second Edition, by Adon H. Brownell. Philadelphia: Chilton Co., 1961. 255 pp., illus. \$8.00.

Industrial Building. Volume I, Proceedings of the Industrial Building Congress held in conjunction with the first Industrial Building Exposition in New York, December, 1960. New York: Clapp & Poliak, Inc., 1961. 232 pp. \$10.00.

Contains the texts of 38 papers presented at the Industrial Building Congress sessions in 1960. Includes papers on such topics as: new dimensions in plant design; use of prefabricated components; advances in use of concrete; new developments in application of plastics to industrial construction; modernizing a

(Continued on page 64)

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August 1961

DIGEST:32

BOLSTERING THE CAVITY WALL: A NEW TECHNIQUE

Last month in this section A/E NEWS presented a comprehensive study of the physical characteristics of rigid urethane foams, the latest arrivals on the building scene in the family of plastic foams. The following report describes an important new application for these foams.

Measurable improvement in the characteristics of the masonry cavity wall results from using rigid urethane foam to fill the cavity, according to structural tests by the Structural Clay Products Research Foundation.

Thermal tests by the Du Pont Company and calculated data have been supplemented by fire resistance studies made at Ohio State University. In addition, Du Pont has made studies of a working structure on one of its laboratory sites, where urethane-filled cavity walls totaling 70 feet in length enclose air-conditioned office, canteen, and rest room areas. Based on this experience, Du Pont cites improved insulating quantities and greater resistance to infiltration by water, vapor, or air. Performance indicates that the urethane foam filling can contribute savings in both construction and long-term building operation that will more than compensate for the initial cost of foam installation.

Structural advantages

The results of tests by the Structural Clay Products Research Foundation on 10-inch brick cavity walls, with the two and one-half inch cavity filled with poured-in-place urethane foam, indicated that the transverse strength of such walls is more than doubled, according to Robert B. Taylor, director of the foundation.

To determine structural characteristics, three 10-inch cavity walls, faced on each side with four-inch brick wythes, were built at the Geneva, Ill., laboratories of the foundation. The cavities in each were filled with poured-in-place urethane foam. Air bags simulating uniform wind pressure were pressed against the four-by-12-foot spans. The average ultimate load for the three walls tested was two and one-quarter times better than the average recorded in comparable tests on three unfilled wall specimens. This improvement was directly attributed to the shear bond action of the two and one-half inch filling of urethane foam.

18 foot height

In terms of structural possibilities, this 2.25 factor permits consideration of a maximum height of 18 feet for a 10-inch masonry cavity wall without additional structural steel as a support. The stress formula applicable to 10-inch walls, based on unsupported span in relation to net thickness of the masonry components of the wall, is $l/d = 18$. An increase in strength of the cavity wall by a factor of 2.25 permits use of $l/d = 27$ as the basis for calculation. This increases the permissible height from 12 to 18 feet, allowing a significant reduction in structural steel.

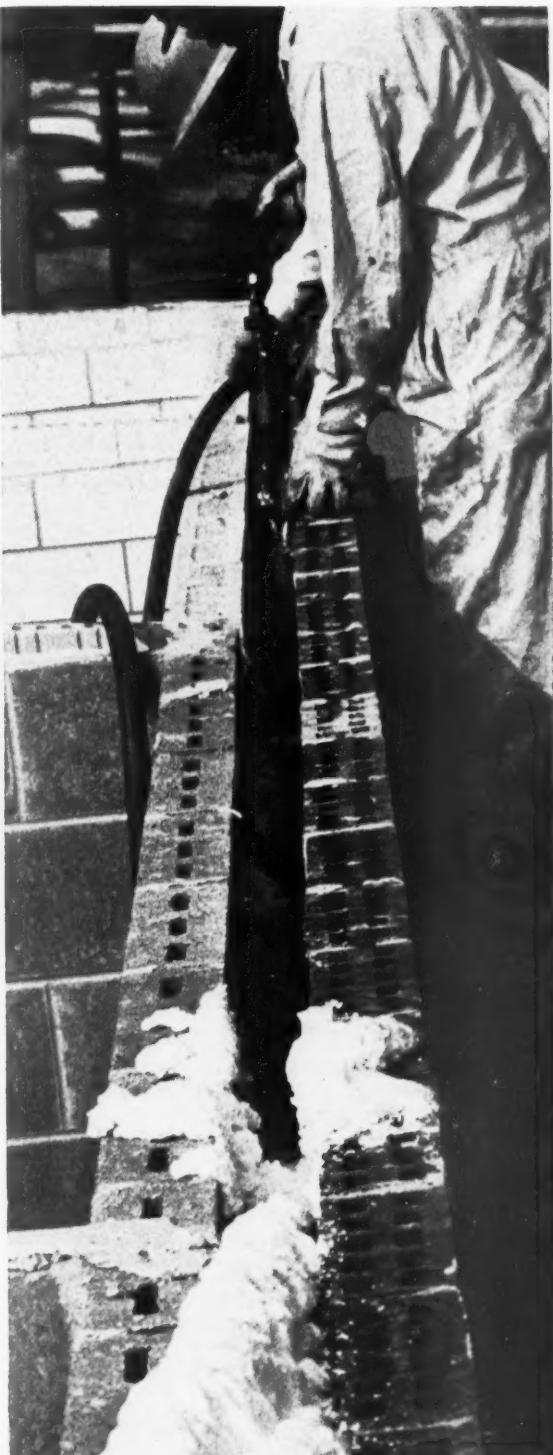
An alternate and more conservative calculation is based on the assumption that the urethane foam-filled wall functions as a solid wall. In this case, l/d becomes 20, based on gross rather than net thickness, and the maximum permissible height is 16-2/3 feet.

Whichever calculation is applied, the architect gains greatly increased latitude in structural design in comparison with hollow cavity walls.

Insulating Properties

A second major improvement is in insulating properties, as determined in thermal tests by Du Pont. The urethane foam formulation used, made with "Hylene" organic

Workman applies foam (top). Treated wall is shown at bottom.



DIGEST:32

isocyanates and foamed with "Freon" blowing agent, has an initial K factor of 0.12*. When exposed to air, the K factor can increase to an equilibrium value of 0.16, as the result of diffusion of atmosphere into the cells. While such reduction is less likely in foam enclosed in a cavity, the more conservative approach has been taken in calculating the U factors for various types of cavity walls in the following table:

10-INCH CAVITY WALL

Insulation	U Factor
Uninsulated	0.348
2-1/2" water repellent expanded mica	0.134
2-1/2" loose glass fiber	0.111
1-1/2" rigid urethane foam	0.089
2" rigid urethane foam	0.069
2-1/2" rigid urethane foam	0.057

Even in the thinnest practical application in this type of structure, urethane foam retards heat flow better than any of the alternatives listed above. In the 2½" thickness, the resistance to heat flow is roughly twice as good for the urethane foam.

Moisture Transmission

Cavity filling with urethane foam also greatly increases resistance to transmission of moisture. The vapor transmission rate for a 10-inch cavity wall with urethane foam filling is 0.44 perms (grain of moisture transmitted /sq ft/hr/in. of mercury pressure differential /in. thickness), using two perms as the value both for the urethane foam and for each of the 4" face brick walls. This level of resistance to moisture transmission should prove adequate against all but the most severe vapor pressure gradients.

In addition, the foam has 90 to 95 per cent closed-cell structure. This relative imperviousness to passage of air and water should provide extremely weathertight construction, particularly at door and window openings.

Fire Resistance

Pilot fire tests, conducted at Ohio State University on similar wall samples, indicate at least a one-hour fire resistance rating for a urethane-filled cavity wall without wall ties.

Inside the wall cavity, without an air supply, rigid urethane foam will not burn as it will when in the presence of air. Instead, it gradually softens and chars as the temperature increases. Its low thermal conductivity tends to localize the softening and charring to the immediate area of high temperature. The rest of the foam is unaffected.

In the Ohio State University tests, the time temperature curve specified for ASTM E 119-55T was followed. After one and three-quarters hours, the temperature of the inside of the wythe exposed to the furnace reached 650°F. The foam was then no longer functioning as insulation.

The foam itself reached a temperature of 250°F, its heat distortion point, at the end of 65 minutes, and reached its softening point of approximately 350 degrees F after 75 minutes. The cavity wall construction with its foam core was therefore structurally intact for at least one hour.

Cost

Performance, which appears to offer significant advantages for the urethane foam filling, must be related to economics to gain serious consideration as a building material. Because the concept itself is new and because the equipment for application is still in a state of evolution, precise installed cost figures are not yet available. Experience to date, however, indicates 36 cents per sq. ft. of 2½" urethane foam filling as a reasonable basis for estimating probable installed cost. This is considerably more than the 10 to 15 cents installed cost for expanded mica or loose glass fiber. However, ultimate cost analysis on a 50-year basis for operating heating and cooling equipment as a function of the U factor of the wall gives the following figures:

* BTU
hr. sq. ft. in. $\Delta^{\circ}\text{F}$

Filling for 10-inch Cavity Wall	Estimated ultimate operating cost		
	Heating	Cooling	Total
Uninsulated	\$1.00	.65	\$1.65
2-1/2" water repellent expanded mica	.38	.25	.63
2-1/2" loose glass fiber	.32	.21	.53
1-1/2" urethane foam	.26	.16	.42
2" urethane foam	.20	.13	.33
2-1/2" urethane foam	.16	.11	.27

These figures indicate that the increased thermal efficiency of a masonry cavity wall filled with urethane foam brings it into a reasonable range on the basis of heating costs alone. When ultimate costs of heating and cooling are considered, the foam shows an ultimate operating cost saving. These observations are shown more clearly in the following tabulation:

Filling	Estimated initial cost	Initial cost plus ultimate heating expense	Total ultimate cost including
			heating & cooling
Uninsulated		\$1.00	\$1.65
Expanded Mica	.10	.48	.73
Glass Fiber	.15	.47	.68
1-1/2"			
urethane foam	.22	.48	.64
2"			
urethane foam	.29	.49	.62
2-1/2"			
urethane foam	.36	.52	.63

Over and above long-term operating costs, potential savings in structural steel—perhaps as high as 25 cents per sq. ft.—offer design possibilities which could eliminate the cost differential without taking long-term operating costs into account.

Installation

Conventional foaming systems or the newly-developed frothing technique can be used to fill the cavity. A number of suitable foaming compositions are commercially available as two-part systems.

Rigid urethane foam insulation can be poured in place at the construction site. The special equipment for mixing and pouring the foam ingredients is available from several suppliers. With it, an experienced operator should be able to fill a cavity as rapidly as now possible with conventional loose-fill insulating materials.

With the conventional foaming system, the cavity must be filled by several successive pours, each giving a maximum foam rise of two to three feet. Each pour must be allowed to rise and set before the next layer is deposited, to avoid damage to the foam structure and excess pressure on the walls of the cavity.

Froth Foaming

Commercial equipment for froth foaming has just become available. These units are more complex, but allow filling the cavity continuously because the froth delivered is light enough to deposit on the top of rising foam without affecting its structure. Average density of the foam can be maintained at a lower level and internal pressures on the cavity walls during application are reduced.

Case Study

A field installation enclosing air-conditioned office, canteen, and rest room areas at Du Pont's Elastomers Laboratory, Chestnut Run, near Wilmington, Del., was completed on September 26, 1960.

This wall consisted of an exterior wythe of four-inch "jumbo" brick, a two and one-half inch cavity, and an interior wythe of four-inch concrete block and glazed tile, held together with $\frac{3}{16}$ -inch diameter metal ties. The wall was nine feet high, 70 feet long, contained openings for air-conditioning and ventilating units, and had a total cavity volume of some 130 cubic feet.

After one winter's use, this foam-filled cavity wall is considered satisfactory in all respects. After aging, the average over-all U factor, as determined with heat flow meters, is 0.059, in close correlation with the previously calculated data.

Thermally, the low K factor of the urethane foam is complemented by the high heat capacity of the clay masonry.

BOOKS

(Continued from page 62)

75-year old building; handling construction problems in foreign countries; etc.

Boilers: Types, Characteristics, and Functions by Carl D. Shields, PE. New York: F. W. Dodge Corp., 1961. 559 pp., illus. \$15.00.

An encyclopedic guide to the subject of boilers which provides information necessary or helpful in the selection, installation or operation of boilers of all types.

Electrical Estimating, Third Edition, by Ray Ashley. New York: McGraw-Hill Book Co., 1961. 225 pp., illus. \$12.50.

This book is a practical guide to estimating essentially aimed at the electrical contractor and estimator. Includes special sections on lighting and power branch wiring; distribution equipment; auxiliary summary, and final bid sheets; and estimating work of other trades, special projects and residential wiring.

films

Sound Control in Design available through United States Gypsum Co.'s Architect Service Dept., 300 W. Adams St., Chicago 6, Ill. 16 mm., sound and color, 21 minutes running time.

Deals with principles and solutions of sound absorption and transmission problems in large buildings. Distributed in conjunction with film showing are copies of 96-page manual "Sound Control in Design," prepared by Bolt, Beranek & Newman, acoustical consultant firm.

Four New Uses for Semi-rigid ABS

Pipe available through Film Dept. C-2, Marbon Chemical Div., Borg-Warner Corp., Washington, W. Va. 16 mm., color, 20 minutes running time.

Depicts various installations using manufacturer's semi-rigid plastic pipe. Covers use by urban and rural water systems, gas utilities and manufacturers of mobile homes.

Bio-Pac—Big City Sewage for Small Capacity Needs available through Link-Belt Co., Dept PR, Prudential Plaza, Chicago 1, Ill. 16 mm., sound and color, 10 minutes running time.

Depicts manufacturer's single-unit sewage treatment system. The factory-built treatment plants are available in capacities to serve 50 to 500 people. Film shows operation of system in relation to porous employed in a large municipal bio-filtration plant.

EDITORIAL

ROOM AT THE TOP. It is difficult to fly a helicopter. To ensure steady flight control, one must know how to vary the pitch of the machine's rotor. This requires great skill. As a result we have among us to-day very few amateur helicopter pilots.

Hence the recent announcement by Lockheed that it has developed a helicopter *not* requiring rotor pitch changes for control is of the greatest import. Particularly for architecture, engineering and planning.

If piloting a helicopter is now to be no harder than driving the Ford to work (1950) or hitching up the old mare (1900), then the whole approach to building design will be altered. No longer will access be through the toe of a building, but through the roof. Occupants will arrive that way. So may deliveries. Chimneys, vents, exhausts, cooling towers, machine rooms will all be swept under the rug of a good, smooth landing strip, or pushed over to one side, into a tight mechanical huddle. The spiked battlecruiser building of our day will turn into the aircraft-carrier architecture of to-morrow.

But, architecturally, a far more impressive consequence of two helicopters in every hanger will be the effect on concentration of population. If a reasonable commuting radius based on surface transportation is about 50 miles, then the helicopter will likely raise this to 100 miles. This means that instead of serving an area of about 7500 square miles, the city will become the focus for an area of over 30,000 square miles, or four times as much. What happens then?

Take first the impact on building height. If an area four times the present disgorges its citizens into the central city, this city, having filled its horizontal perimeter, will grow upwards; so that Frank Lloyd Wright's concept of a building a mile high is going to seem less far fetched than when it was

first advanced. This will pose some challenging problems: a call for more powerful structural and foundation systems, faster elevators, more highly organized mechanical complexes. The possibility of helicopters colliding with the building face must, unhappily, be considered. The F-86's bout with the Empire State Building is still fresh in our mind. Planning for such mishaps would require radical changes in the design and erection of curtain walls: special glass, special spandrels, special mullions, special louvers.

Consider next the landing and "parking" requirements. A bus is more economical than a private car in terms of the space it requires per person; yet the average citizen prefers to use his car. As the helicopter becomes commonplace, there is no reason to think that this pattern will change. To accommodate these machines, vast platforms with huge overhangs may cap all the larger buildings; or possibly the principles of aircraft-carrier design will need to be adopted. Rotors will be made to collapse, perhaps part of the fuselage will telescope, and the machine will be lowered through trap doors to a sub-roof storage area. Several floors at the top would then be taken up in this manner, a typical feature of a new city scenery.

There is a sobering thought which pervades this whole airy future. The Bomb may make subterranean cowards of us all. But the chances are that problems caused by a helicopter-bound nation will one day be with us, possibly quite soon, judging by the Lockheed development. It is true that the new easy-to-operate machine is still a certain way from the assembly line. But this gives us all time to think; to plan; perhaps to organize exploratory competitions in architecture, planning and traffic engineering; so that when the day comes we shall be a little readier to meet it than we were when the automobile first came upon us and caught us napping.

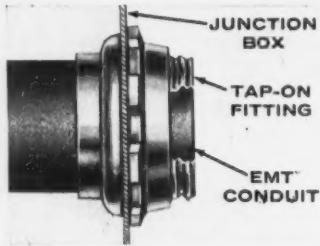
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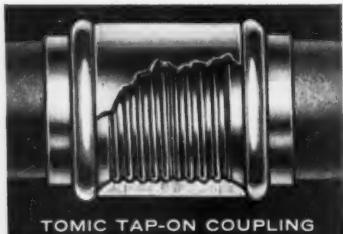
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INDEX

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- 13 Adams Rite Mfg. Co.
- 32 Albro Metal Products
- 63 American Dockbridge, Inc.
- 45 American Hardware Corp., Corbin Wood Products Div.
- 83, 85, 87, 89 American Hardware Corp., Russell & Erwin Div.
- cover 3 Anaconda American Brass Company
- 29 Arketex Ceramic Corp.
- 46 Bally Case & Cooler Company
- 55 Julius Blum & Co.
- 48, 50 Charles Bruning Co., Inc., Paragon Revolute Div.
- cover 2 Burns & Russell Company
- 16 Philip Carey Mfg. Co.
- 43 Central Commercial Co., Darlington Brick Co. Div.
- 45 Corbin Wood Products Div., American Hardware Corp.
- 37 Corning Glass Works
- 33 Dap, Inc.
- 43 Darlington Brick Co. Div., Central Commercial Company
- 83, 85, 87, 89 Eugene Dietzgen Company
- 8 Dow Corning Corp.
- 9 Dresser-Deeco Company Div., Dresser Industries, Inc.
- 52 Ebco Mfg. Co.
- 14-15 Fiat Metal Mfg. Co.
- 30 Fibreboard Paper Products Corp., Pabco Floor Covering Div.
- 41 Flintkote Company, Insulrock Div.
- 11 Formica Corp.
- 50 General Electric Company, Apparatus Sales Div.
- 23 Hanley Company
- 31 Haws Drinking Faucet Company
- 62 Hendrick Mfg. Company
- 48 Hollaender Mfg. Company
- 56 Holophane Company
- 4 Inland Steel Products Company
- 41 Insulrock Company Div., Flintkote Company
- 2-3 Janitrol, Div. Midland-Ross Corp.
- 42 Libbey-Owens-Ford Glass Company
- 48 Liskey Aluminum, Inc.
- 61 R. C. Mahon Company
- 46 Marlite Div., Masonite Corp.
- 2-3 Midland-Ross Corp., Janitrol Div.
- 53-54 Mississippi Glass Company
- 47 McQuay, Inc.
- 59 National Steel Corp., Stran-Steel Corp. Div.
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- 48, 50 Paragon Revolute Div., Charles Bruning Co., Inc.
- 46 Pass & Seymour, Inc.
- 40 Frederick Post Company
- 5 Prescolite Mfg. Corp.
- 39 Rheem Mfg. Co., Ruud Mfg. Co., Div. Oscar C. Rixson Company
- 83, 85, 87, 89 Russell & Erwin Div., American Hardware Corp.
- 39 Ruud Mfg. Co. Div., Rheem Mfg. Co. Speakman Company
- 45 Sta-Crete Inc.
- 59 Stran-Steel Corp. Div., National Steel Corp.
- 36 Tectum Corp.
- 12 Timber Engineering Company
- 66 Tomic Sales & Engineering Company
- 49 Upco Company
- 60 Williams Equipment & Supply Company
- 50 Wooster Products
- 34-35 Youngstown Sheet & Tube Company
- 51 Zero Weather Stripping Company

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SEPT. ARCHITECTURAL TOUR OF MEXICO in cooperation with Sociedad Arquitectos Mexicanos. For Information write T. H. Hewitt, 2413 Driscoll, Houston 19, Tex.

3 INTRODUCTION TO EUROPEAN ARCHITECTURE TOUR: 30-day tour under the direction of Joseph Watterson, Editor of the "AIA Journal." For further information contact: Travel Abroad, Inc., Rm. 527, 550 Fifth Ave., New York 36, N. Y.

25-28 INDUSTRIAL BUILDING EXPOSITION & CONGRESS: New York Coliseum, New York City.

27-30 NEW YORK STATE ASSN. OF ARCHITECTS: annual meeting and convention, Saranac Inn, Upper Saranac Lake, N. Y.

28-30 AIA CENTRAL STATES REGIONAL CONFERENCE: St. Louis, Mo.

OCT. 6 SEVENTH ARCHITECTS' TOUR OF JAPAN: 24-day tour. For further information contact: Kenneth M. Nishimoto, AIA, 263 South Los Robles Ave., Pasadena, Calif.

16-20 NATIONAL SAFETY COUNCIL: annual convention, Chicago, Ill.

18-22 CALIFORNIA COUNCIL AIA: annual convention, Coronado, Calif.

NOV. 1-3 AMERICAN CONCRETE INSTITUTE: 14th regional meeting, Dinkler-Tutwiler Hotel, Birmingham, Ala.

2-4 CONSULTING ENGINEERS COUNCIL: board of directors meeting, Miami Beach, Fla.

8-10 TEXAS SOCIETY OF ARCHITECTS CONFERENCE: Hotel Texas, Fort Worth, Tex.

14-16 BUILDING RESEARCH INSTITUTE: fall conferences, Shoreham Hotel, Washington, D. C.

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